

Historic, Archive Document

**Do not assume content reflects current
scientific knowledge, policies, or practices.**

at 52120
AIUS

SM

1993 CROP



DURUM WHEAT QUALITY REPORT

Physical, Chemical, Milling, and Spaghetti Characteristics

United States Department of Agriculture
Agricultural Research Service
North Central Region



DURUM WHEAT QUALITY REPORT

ON SAMPLES RECEIVED FROM THE 1993 CROP

Spring and Durum Wheat Quality Laboratory
USDA, Agricultural Research Service
Harris Hall, NDSU
Fargo, North Dakota 58105

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
in cooperation with
STATE AGRICULTURAL EXPERIMENT STATION

QUALITY EVALUATION OF DURUM WHEAT CULTIVARS

1993 CROP^{1/}

by

G.A. Hareland, W.J. Newell, , J.G. Wear^{2/}, and M. Skunberg^{3/}

1/ This report represents cooperative investigations on the quality of Durum wheat cultivars from the 1993 crop. Some of the results presented have not been sufficiently confirmed to justify varietal release. Confirmed results will be published through established channels. Cooperators submitting samples for analysis have been given analytical data on their samples prior to release of this report. The report is primarily a tool for use by cooperators and their official staff and by those individuals having direct and special interest in the development of agricultural research programs.

This report was compiled by the Agricultural Research Service, U. S. Department of Agriculture. Special acknowledgment is made to the North Dakota State University for use of their facilities and the services provided in support of these studies. The report is not intended for publication and should not be referenced in either literature citations or quoted in publicity and advertising. Use of the data may be granted for certain purposes upon written request to the agency or agencies involved.

2/ Research Food Technologist, and Physical Science Technicians, USDA/ARS, Hard Red Spring & Durum Wheat Quality Lab., NDSU, Fargo, ND.

3/ Food Technologist, Dept. of Cereal Science & Food Technology, NDSU, Fargo, ND.

TABLE OF CONTENTS

<u>CONTENTS</u>	<u>PAGE NO.</u>
Introduction	3
Source of the Samples	4
Tables of Varieties and Crosses	5
Methods	6-14
Flow Diagram for Large Durum Wheat Samples	9
Flow Diagram for Small Durum Wheat Samples	10
Discussion	13
Selection of Standards	14
Experimental Results - 1992 Crop	15
Field Plot Nursery Samples	15
Uniform Regional Nursery Samples	16
Advanced Nursery Samples	17
Explanation of Abbreviations	18
Reference Mixograms	19
Durum Wheat Quality	Tables 1-20

INTRODUCTION

The thirtieth Durum Wheat Quality Report contains data for the 1993 crop. Samples of standard cultivars and new selections of durum wheat grown in cooperative experiments in the durum wheat regions of the United States were milled and evaluated by the Hard Red Spring and Durum Wheat Quality Laboratory on the campus of North Dakota State University, Fargo, ND. Methods and techniques are described in detail in the text of the report.

Durum wheat samples of at least 2 kg were milled in a Buhler experimental mill, or macro procedure, and further processed into spaghetti. Smaller wheat samples were milled using the micro procedure and were not processed into spaghetti. Although, small samples having acceptable kernel characteristics and dust color scores, if possible, should be included in the macro procedure the following year.

The purpose of this report is to make available to cooperators the quality data on standard cultivars and new selections of durum wheat from the 1993 crop.

In this report, cooperatives are referred to as groups of farmers who have joined together to market their wheat. Cooperatives are organized under state laws and are not affiliated with any federal agency. The Hard Red Spring and Durum Wheat Quality Laboratory is a unit of the Department of Cereal Science and Food Technology, North Dakota State University. The laboratory is supported by grants from cooperatives, the U.S. Wheat and Barley Council, and the U.S. Wheat and Barley Quality Council. The laboratory is also supported by grants from the U.S. Wheat and Barley Quality Council, the U.S. Wheat and Barley Council, and the U.S. Wheat and Barley Quality Council.

The research and extension work of the Agricultural Experiment Station of the Department of Cereal Science and Food Technology is conducted to make available to farmers in North Dakota and the University faculty and their students, new and improved knowledge. These studies, and reports, are made available to the public and cooperatives for their use. Any further questions concerning the laboratory and its activities, can be directed to the laboratory director or the extension representative responsible for the specific agricultural experiment.

Hard Red Spring Technical and Physical Properties, 1993, North Dakota Hard Red Spring & Durum Wheat Quality Lab., NDSU, Fargo, ND

Cereal Science and Food Technology Dept., of Cereal Science & Food Technology, NDSU, Fargo, ND

SOURCE OF THE 1993 CROP SAMPLES

Tests were performed on 548 samples from 14 stations in five states (California, Arizona, North Dakota, Montana, and South Dakota) and one Canadian location. Data presented in this report are from the Field Plot Nursery, Uniform Regional Nursery, and Advanced Nursery. Durum samples from the Special Nursery were not included in this report since they were of interest only to the breeders.

FIELD PLOTS - 4

Minot - North Dakota

UNIFORM REGIONAL NURSERY - 288

Day County and Selby - South Dakota
Bozeman and Sidney - Montana
Dickinson, Carrington, Williston,
and Langdon - North Dakota
Swift Current - Saskatchewan

ADVANCED NURSERY - 119

Kings Co., Imperial Valley and Davis - California
Tucson - Arizona

SPECIAL NURSERY - 137

Yuma - Arizona
El Centro - California

1993 UNIFORM REGIONAL DURUM NURSERY

LIST OF ENTRIES

Entry No.	Entry	Pedigree	P.I. No.	Origin
1	MINDUM		5296	MN
2	STOA			ND-USDA
3	WARD		15892	ND-USDA
4	RUGBY		17284	ND-USDA
5	VIC		17789	ND-USDA
6	LLOYD		476211	ND-USDA
7	MONROE		478289	ND-USDA
8	RENVILLE		510696	ND-USDA
9	MEDORA			ND-USDA
10	SCEPTRE			U.SASK
11	D87122	D8024/MONORE		ND-USDA
12	D87130	D8024/MONROE		ND-USDA
13	D87240	D7798/DT367		ND-USDA
14	D87436	W85 GH-227/D804	ND-USDA	
15	D87450	D82104/AUST#820198/	/D82108	ND-USDA
16	D88273	D8189/D81141		ND-USDA
17	D88289	D8189/D81141		ND-USDA
18	D88303	D82106/D8179		ND-USDA
19	D88450	JO'S'/CR'S' /D.COLL.01/3 /DOMIL/4/D8288/5/D8261		ND-USDA
20	D88793	D81170/D8177		ND-USDA
21	D89008	D81154/D7925		ND-USDA
22	D89111	D8219/D8305		ND-USDA
23	D89135	D8193/D8335		ND-USDA
24	D89172	D8191/D81114		ND-USDA
25	D89235	D8269/D81154		ND-USDA
26	D89263	NAHD81-485/D8194		ND-USDA
27	D89331	D8372/D8325		ND-USDA
28	D8460	D8030/D8016		ND-USDA
29	D89424	D86519/D8374		ND-USDA
30	D89538	GS'S'/CR'S' /3/021563/AA'S/ /CT/4/B.STE/D8261		ND-USDA
31	D89-3464	-----		AGRIPRO
32	D89-476	LLOYD/MEDORA		AGRIPRO

METHODS

Methods used in testing samples were essentially the same as provided in the previous report.

Briefly, the following methods and terminologies were applied:

Test Weight Per Bushel - The weight per Winchester bushel of dockage-free wheat subsequent to passing the sample through a Carter-Day dockage tester⁴.

Thousand Kernel Weight - The 1000 kernel weight was determined from a 10 gm sample of cleaned, hand-picked wheat using a Seedburo Seed Counter⁴.

Kernel Size - The percentage of the size of the kernels [large, medium, and small] was determined on a wheat sizer as described by Shuey⁵.

The sieves of the sizer were clothed as follows:

Top Sieve - Tyler # 7 with 2.92 mm opening

Middle Sieve - Tyler # 9 with 2.24 mm opening

Bottom Sieve - Tyler #12 with 1.65 mm opening

Protein Content - Both the Leco FP-428 Nitrogen Determinator and the near infrared technique were used to determine protein content. Nitrogen values, as determined by the Leco FP-428 Nitrogen Determinator procedure, were multiplied by 5.7 to calculate protein values.

Hardness Test - The procedure (AACC Method 39-70A) requires grinding durum wheat samples with a UDY grinder, and obtaining data from a Technicon 450 near infrared analyzer. Wavelengths used were 1680 nm and 2230 nm. This procedure was developed by Mr. Karl Norris, USDA, Beltsville through a collaborative research project in which this Laboratory also participated. Durum wheat hardness scores for the 1993 uniforms ranged 127 to 61 with an average of 103.

4/ Mention of a trademark name or proprietary product does not constitute a guarantee or warranty of the product by the U. S. Department of Agriculture, and does not imply its approval to the exclusion of other products that may also be suitable.

5/ Shuey, William C. A wheat sizing technique for predicting flour milling yield. Cereal Sci. Today 5:71 (1960).

Milling - All samples were cleaned by passing the wheat through a Carter-Day dockage tester and through a modified Forster scourer Model 6. The clean, dry wheat from the larger 2 kg samples was tempered in three stages: first to 12.5% moisture at least 72 hours prior to the second stage; second, an increase of 2.0% moisture to a cumulative moisture of 14.5% for 18 hours; and third, an increase of 3.0% moisture to a cumulative moisture content of 17.5%, 45 minutes prior to milling. The smaller 150 gram samples were pretempered to 12.5% moisture for at least 72 hours. Following, they were tempered to 16.5% moisture and allowed to stand overnight prior to milling.

Samples from the Field Plot, Special, and Advanced Nurseries were milled in a Buhler experimental mill specially designed for milling durum wheat. The mill is equipped with corrugated rolls throughout, and the semolina is purified on a Miag laboratory purifier. All stock is handled pneumatically. The mill flow is shown on page 9. Prior to milling, the Buhler mill and purifiers were adjusted to maximize semolina yield, yet keep the speck count to an acceptable level.

Samples from the Uniform, and Special Nurseries were milled in a Brabender Quadrumat Junior mill equipped with #24GG on the drum sieve. The flow diagram of this system is shown on page 10. The unpurified semolina was rebolted for 30 sec on a strand sifter equipped with a U.S. #35 Tyler sieve. The throughs of the #35 Tyler sieve were classified as rebolted semolina. The overs of the #35 Tyler sieve were reground and sieved again for 30 seconds. The throughs were combined with the first sieving, and the combined semolina represented the material tested. The overs of the #35 Tyler sieve were classified as crude shorts, and overs of the rotating #24GG sieve were classified as bran.

Semolina Extraction - For both the macro and micro method of milling, the percent semolina extraction was calculated on a total product basis.

Speck Count - The number of specks was determined from three separate one-inch square areas of semolina enclosed by a special glass and frame. Any materials other than pure endosperm chunks, such as bran particles, were considered specks. The average of three readings was converted to the number of specks per 10 sq in (speck count). Speck count is determined only on the macro milled samples.

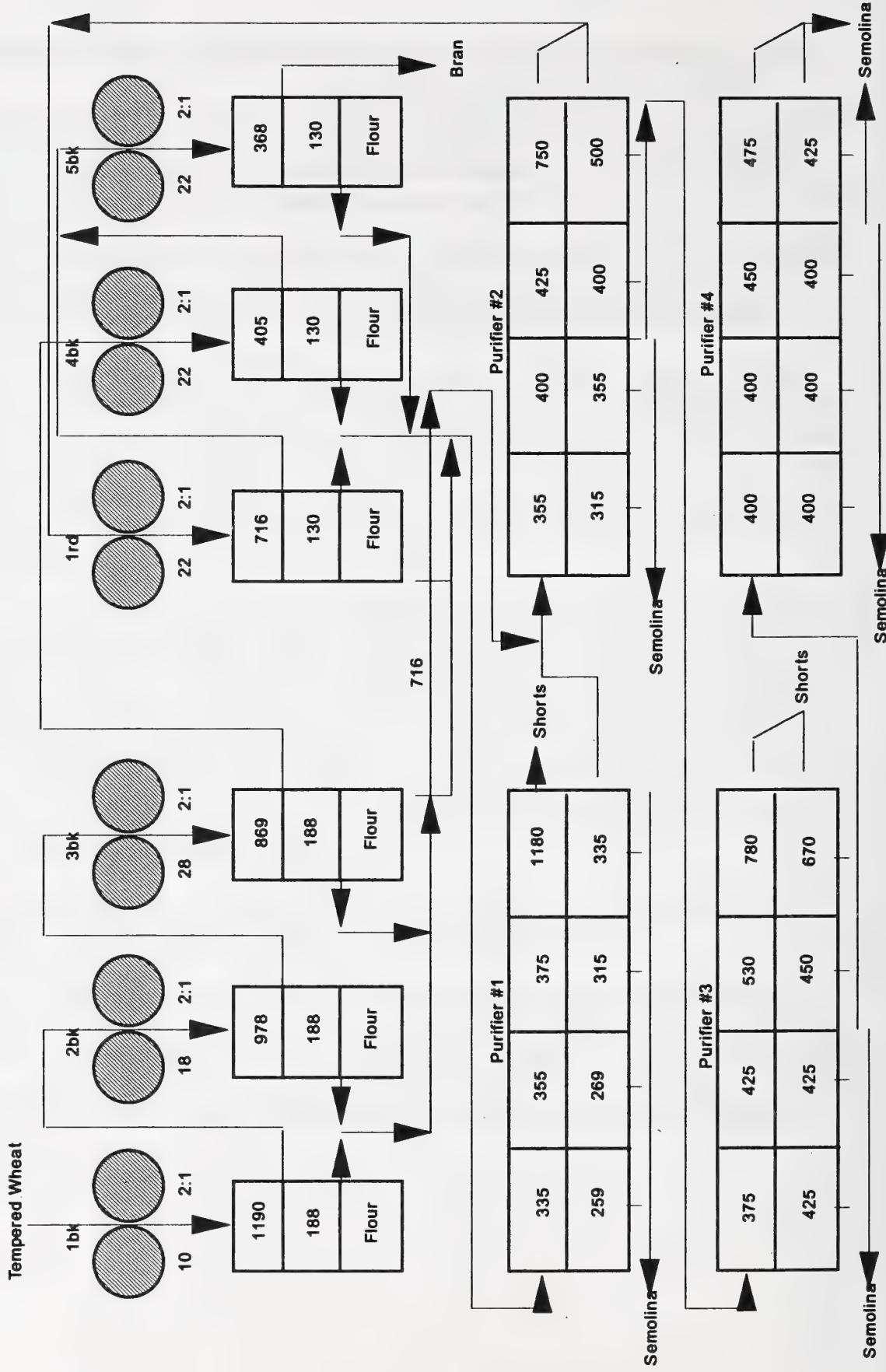
Mixograph Analysis - Mixing properties were determined from a constant weight of semolina (10 g, mb) and water (6.0 ml).

Mixogram Pattern - The reference mixograms shown on page 19 illustrate different types of mixogram patterns. A single number is assigned each pattern to classify the curves. Larger numbers indicate stronger mixing characteristics.

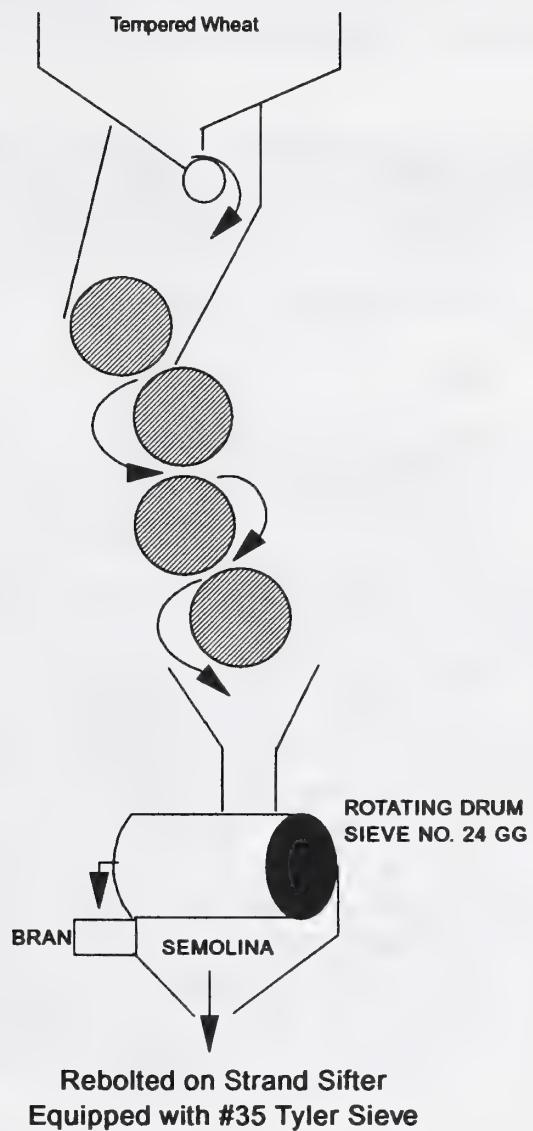
Color Score - The color of the spaghetti or semolina has generally been accepted as the most important single grading factor. A deep amber or golden color is most preferable. The amount of yellow pigmentation determines the color.

Cooked Weight - Weight of cooked spaghetti determined after cooking, rinsing, and draining.

FLOW DIAGRAM FOR LARGE DURUM WHEAT SAMPLES (MACRO PROCEDURE)



FLOW DIAGRAM FOR SMALL DURUM WHEAT SAMPLES (MICRO PROCEDURE)



Semolina and Spaghetti Color - A Minolta CR-310 series ChromaMeter was used to calculate an absolute value of a standard semolina and spaghetti sample in the L* a* b* color system. In this system, L* refers to lightness and a* and b* are the chromaticity coordinates (b* values relate to the blue - yellow chromaticity coordinates). A target b* value was obtained from semolina and spaghetti processed from the standard cultivar Vic. Color scores were derived from L and b values where score = L + (b*²) / 20. Because of the importance of yellow pigmentation, the intensity of b was weighted twice.

MACRO Spaghetti Processing - Spaghetti was processed on a semi-commercial scale pasta extruder (DEMACO). The controls and samples were processed under the following extruding conditions.

Temperature 49.5°C

Rate. 12 rpm

Absorption. 32.5%

Vacuum. 18 in Hg

These were the optimum conditions for processing spaghetti.

Processing spaghetti in the laboratory involved premixing 1000-g batches of semolina in a Hobart C-100-T mixer equipped with a pastry knife agitator. The contents were mixed at a slow speed for approximately 10 seconds while water was added to the semolina. Upon addition of all the water to obtain 32.5% absorption, the contents were blended at high speed for 30 seconds. The mixer was then stopped to scrape down the sides of the bowl, and blending continued for an additional 90 seconds to complete the premix stage. The premixed pasta was then transferred to the vacuum mixer of the press and extruded through an 84-strand 0.043 in. Teflon spaghetti die. A jacketed extension tube (9-1/4" long x 1-3/4" inside diameter) was attached to the semi-commercial pasta extruder to allow a longer time for hydration of the semolina and minimize the number of white specks (unhydrated semolina) in the spaghetti. Extrusion temperature was controlled by a circulating water bath.

Spaghetti Drying - Spaghetti was dried in an experimental pasta dryer for an 18 hour, computer controlled cycle. The drying cycle was a modification of that described by Gilles, Sibbitt and Shuey⁶. During the drying period, the humidity of the dryer was decreased linearly from 95 to 50% R.H. The temperature was held at 40°C for the first 10 hour and was then decreased linearly from 40°C to 25°C during the last 8 hours of the cycle.

Cooking Characteristics of Spaghetti

A. Cooking Procedure

Spaghetti (10 g) which had been broken into lengths of approximately 5 cm, was placed into 300 ml of boiling water in a 500 ml beaker. After 12 min. cooking, the samples were washed thoroughly with distilled water in a Buchner funnel, allowed to drain for 2 min., and then weighed to determine cooked weight.

B. Firmness Score

Two strands of cooked spaghetti were placed on a plexiglass plate and sheared at a 90° angle with a special plexiglass tooth. A continuous recording of distance versus force was made by an Instron instrument during the operation. An automatic integrator was used to calculate the area under the curve (g-cm) which was the amount of work required to shear the cooked spaghetti. To measure firmness, the average of three integrator scores was used, and the average work to shear represented a measure of spaghetti firmness.

Calculations were as follows:

$$E = 0.0216 \times A \text{ (g-cm)}$$

A = Average integrator reading

E = Area of curve expressed as g-cm (work)

The higher the value, the firmer the spaghetti. A value of approximately 7.00 appears to be preferred.

C. Residue

Weight of the solids remaining after the combined cooking and washing water was evaporated.

⁶Gilles, K.A., Sibbitt, L.D., and Shuey, W.C. Automatic laboratory dryer for macaroni products. Cereal Sci. Today 11:322 (1966).

DISCUSSION

The following discussion relates the basic techniques and criteria used in the quality evaluation of durum wheat cultivars. Testing factors used to determine the quality characteristics and final evaluation of a particular sample include kernel characteristics, milling performance, and cooking properties.

Each evaluation factor can be important. A sample could be of sufficiently poor quality for a given factor to eliminate it from possible future testing. However, a sample submitted for the first time and found to show little promise should be tested again to confirm the first evaluation. A sample which is consistently rated as little promise or no promise should be discontinued.

Data presented in this report were processed by using the Statistical Analysis System (SAS Institute, Inc., SAS Circle, Box 8000, Cary, NC 27511). The program developed from this system allows flexibility within the quality grading factors. This should allow the evaluations to relate more directly to industry and consumer requirements.⁷¹

The evaluation system consists of 9 dependent variables. These include test weight, 1000 kernel weight, percent small kernels, wheat protein, total extraction, semolina extraction, speck count, semolina protein, and spaghetti firmness score. Eight additional variables are measured and included in the tables for the reader's use and information but are not used in the computerized evaluation of the samples. These are percent large kernels, hardness, mixograph score, wheat ash, semolina ash, falling number, cooked weight, and cooking residue.

After computing an average of each of the 9 variables for the standards from a station or nursery, established values for individual samples are subtracted from each of the standard averages to determine major (MJ) and minor (MI) faulting limits. There are two exceptions where precise values have been assigned, which are independent of the station standards. The first exception is wheat protein, where percentages below 11.5% are classified as MJ faults, and percentages between 11.5% - 12.5% are MI faults (14% m.b.). The second exception is semolina protein, where percentages between 11.0% and 11.5% are classified as MI faults (14% m.b.). Hence, the wheat and semolina protein faulting values remain the same for all stations and nurseries.

⁷¹Nolte, L. L., Youngs, V. L., Crawford, R. D. and Kunerth, W. H. 1985. Computer program evaluation of hard red spring wheat. Cereal Foods World 30:227-229.

SELECTION OF STANDARDS

Whenever possible, the standards selected were commercial cultivars grown at each location or in each nursery. In the tables of data, the cultivars used as standards are identified by an "s" in the second column. At the bottom of each table are cited "average of standards". Quality deviation from these values determine the major and minor faults. In nurseries where breeders did not grow a cultivar for standard comparison with other selections, the North Dakota cultivar Vic was used as the standard. Vic, however, was not necessarily grown at the particular nursery. Other deviations are footnoted in the tables.

HOW SAMPLES ARE SCORED

Each sample is assigned an evaluation score of 4. Major and minor faults determined from the data entered into the computer will reduce this score, depending upon the quality factor being faulted. The effects of the different quality faults are shown in the following table:

DURUM PROGRAM FAULTING AND SCORING VALUES

Variable	Effect on Evaluation		Score ^{b/}	
	Range ^{a/}		Minor	Major
	Minor	Major	fault	fault
Test Wt. (lb/bu)	-2.2	-3.1	-	-1
1000 KWT (g)	-2.1	-5.1	-	-1
Small Kernels (%)	+5	+10	-	-1
Wheat Prot. (%)	12.5	11.5	-1	-2
Tot. Ext. (%)	-2.5	-3.5	-1	-2
Semo. Ext. (%)	-3.0	-4.0	-1	-2
Specks/10 sq. in.	+10	+15	-	-2
Semo. Prot. (%)	11.5	11.0	-1	-2
Firmness (g cm)	-1.5	-2.25	-1	-2

a/ Wheat and semolina protein percents are fixed lower limits for faults. All other values represent the deviation from the average of the standards required to warrant a minor or major fault.

b/ These values are subtracted from a beginning score of 4.

EXPERIMENTAL RESULTS - 1993 CROP

The results are tabulated and presented in the following order: Field Plot Nursery, Table 1; Uniform Regional Nursery, Tables 2-10; and Advanced Nursery, Tables 17-20.

FIELD PLOT NURSERY

Minot, North Dakota - Table1

Four samples were received from this station, all of which were commercial cultivars. Samples were milled, and the semolina was processed into spaghetti using the macro method. Vic was used as the standard.

UNIFORM REGIONAL NURSERY

A total of two hundred eighty - eight samples were submitted for testing. Thirty-two cultivars and experimental lines were received from nine stations in three states and one Canadian province. These included nine commercial durum cultivars, one commercial HRS wheat cultivar, and twenty - two experimental durum lines. Quality data on individual samples from each of the nine nurseries is shown in Tables 2-10. Following in Tables 11-16 is a statistical evaluation of each cultivar and experimental line showing the overall mean, SD, minimum and maximum values, and range of values for seven selected variables.

ADVANCED NURSERY

A total of 119 samples were received from four stations in two states. All samples were milled in a Buhler experimental mill, and the semolina was processed into spaghetti.

Imperial Valley, California - Table 17

Thirty-three samples were received from this station. Westbred 881 was used as the standard.

Davis, California - Table 18

Thirty-one samples were received from this station. Westbred 881 was used as the standard.

Kings Co., California - Table 19

Thirty-one samples were received from this station. Westbred 881 was used as the standard.

Tucson, Arizona - Table 20

Twenty-four samples were received from this station. Westbred 881 was used as the standard.

**EXPLANATION OF ABBREVIATIONS
LISTED UNDER THE HEADINGS AND UNDER
MINOR AND MAJOR DEFICIENCIES IN TABLES**

S or STD = Standard

TW = Test Weight

1000 KWT or KW = 1000 Kernel Weight

LG = % Large Kernels

SM = % Small Kernels

WHT ASH = Wheat Ash

WHT PRO or WP = Wheat Protein

HRD = Hardness

TOTL EXTR or TX = Total Extraction (Semolina
Plus Flour)

SEMO EXTR or SX = Semolina Extraction

MX = Mixograph Score (The higher the number,
the stronger the curve)

SPK or SK = Semolina Speck Count

SEMO ASH = Semolina Ash

FALL NO = Semolina Falling Number Value
(Values above 300 are desired)

SEMO PRO or SP = Semolina Protein

CWT = Cooked Weight

FIRM or FR = Cooked Spaghetti Firmness Score
(Approx. 6.50 to 8.50 is the
desirable range)

RES = Residue in Water of Cooked Spaghetti

SCORE = Sample Evaluation Number (Example 4 =
Good Promise)

STANDARD MIXOGRAMS PATTERNS

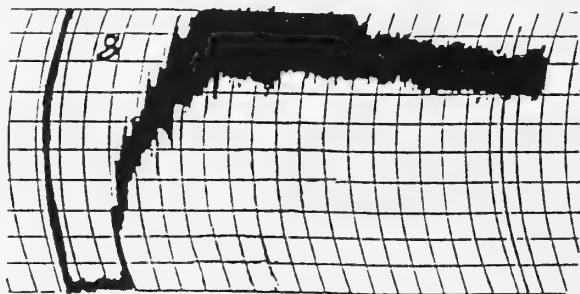
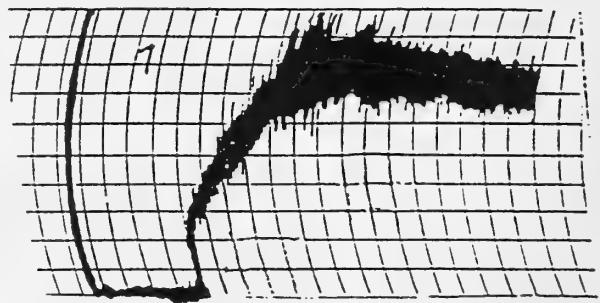
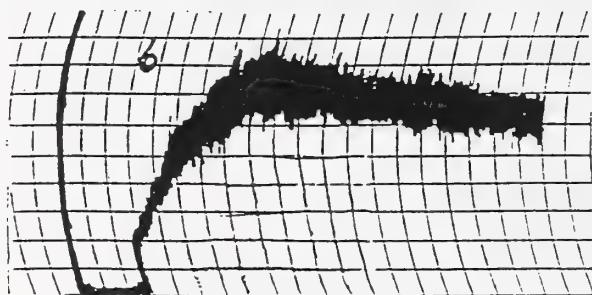
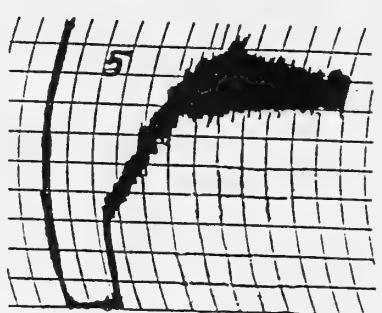
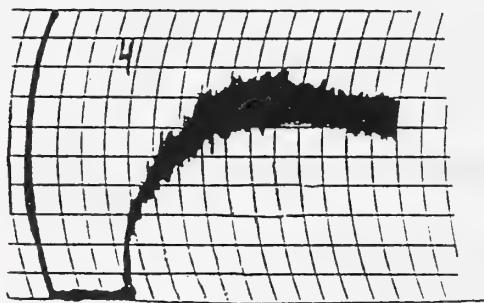
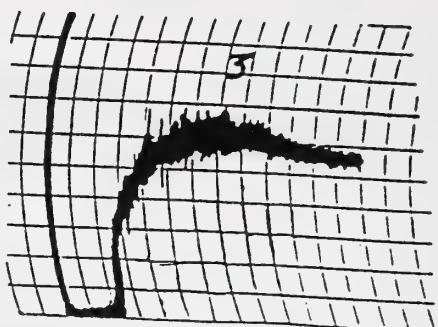
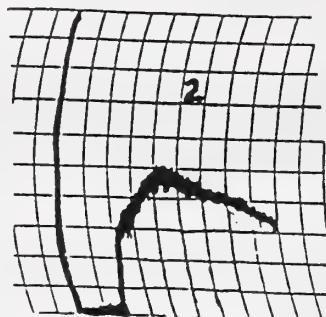
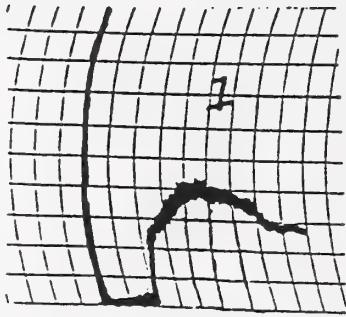


TABLE 1

QUALITY DATA OF DURUM SAMPLES 1993 CROP
STATE=NORTH DAKOTA STATION=MINOT NURSERY=FIELD PLOT

VARIETY	STD	TEST	1000 SIZING	WHT	HARDNESS	FALL NO.	TOTL EXTR	SEMO SPK	DUST	MIXO	
		WT #/BU	K.WT G.	LG %	SM %	ASH %	PRO %	SEC %	ASH %	COLOR %	SCORE
MONROE	60.6	39.2	59	2	1.81	13.2	118	377	73.3	54.7	60
RENVILLE	59.7	30.5	9	9	1.91	11.8	114	380	75.9	56.8	57
RUGBY	61.0	40.0	57	1	1.81	12.4	124	331	75.0	56.7	67
VIC	S 61.1	40.7	53	2	1.87	12.3	109	359	75.0	58.2	77

QUALITY DATA OF DURUM SAMPLES 1993 CROP
STATE=NORTH DAKOTA STATION=MINOT NURSERY=FIELD PLOT

VARIETY	STD	SEMO	VIS	COOK	FIRMNESS	SCORE	DEFICIENCIES										
		WT	PRO	COL	RES	***	TW	KW	SM	WP	TX	SX	DU	SK	SP	VI	FR
MONROE	12.5	7.90	32.2	6.44	6.4	4											
RENVILLE	11.2	8.00	31.3	5.79	6.8	2											
RUGBY	11.8	7.60	29.8	5.42	6.6	4											
VIC	S 11.9	7.70	31.7	5.88	7.3	4											

DEFICIENCIES TW KW SM WP TX SX DU SK SP VI FR
AVG OF STANDARDS 61.1 40.7 2 12.3 75.0 58.2 7.20 77 11.9 7.70 5.88
MINOR FAULTING VALUES 58.9 38.6 7 12.5 72.5 55.2 6.95 87 11.5 7.45 4.38
MAJOR FAULTING VALUES 58.0 35.6 12 11.5 71.5 54.2 6.75 92 11.0 7.25 3.63
**EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

TABLE 2
QUALITY DATA OF DURUM SAMPLES 1993 CROP
STATE=SOUTH DAKOTA STATION=DAY CO. NURSERY=UNIFORM

VARIETY	STD	TEST WT #/BU	1000 SIZING			WHT PRO %	HARD NESS %	SEMO EXTR %	DUST COLOR	MIXO	SCORE ***	DEFICIENCIES TW KW SM WP SX
			K.WT G.	LG	SM							
MINDUM		52.4	22.2	7	16	15.5	89	49.7	6.3	3	4	
STOA	S	48.4	19.1	5	19	15.5	70	51.0	5.5	8	4	MI
WARD	S	53.6	25.5	9	10	14.5	99	53.8	6.7	3	4	
RUGBY	S	54.7	27.1	6	9	14.2	107	53.2	6.8	2	4	
VIC	S	49.8	22.6	5	15	16.1	101	47.4	6.8	7	4	
LLOYD	S	44.0	17.5	2	29	17.7	95	41.8	6.7	8	1	HJ MI MJ MJ
MONROE		49.5	25.0	9	12	14.9	91	49.7	6.9	6	4	
RENVILLE	S	50.3	21.0	2	19	16.2	113	48.7	6.7	8	4	
MEDORA	S	49.9	22.4	6	15	16.1	109	47.4	6.8	8	4	
SCEPTRE		49.7	22.1	7	13	15.6	102	47.4	6.7	7	4	
D87122		49.9	22.0	7	11	15.7	100	47.7	6.8	7	4	
D87130		55.3	27.8	15	7	14.9	102	50.6	6.6	5	4	
D87240		50.5	25.0	21	5	15.9	103	48.1	7.0	7	4	
D87436		48.5	20.0	5	19	15.5	100	46.5	6.8	5	4	
D87450		48.3	22.8	4	15	14.4	86	52.3	6.9	5	4	
D88273		50.5	22.4	4	11	16.4	107	45.2	6.8	8	4	
D88289		54.0	24.3	9	8	15.0	96	47.8	7.0	6	4	
D88303		46.7	21.1	5	21	15.1	96	45.2	6.8	7	4	
D88450		49.4	20.1	7	13	15.4	93	44.2	6.6	7	3	
D88793		49.8	24.0	9	9	16.8	115	45.9	6.9	8	4	
D89008		51.9	21.7	5	18	15.8	107	47.4	7.0	7	4	
D89111		50.7	23.3	15	7	15.7	99	46.5	7.1	7	4	
D89135		52.9	24.0	10	11	16.1	100	47.5	7.1	7	4	
D89172		52.4	22.3	14	9	15.1	100	50.6	6.9	6	4	
D89235		52.6	24.0	7	9	14.6	96	51.0	7.0	5	4	
D89263		51.8	20.9	3	18	16.2	105	48.4	6.8	8	4	
D89331		49.8	22.5	7	16	15.5	101	46.2	6.9	8	4	
D8460		53.3	25.5	9	7	14.9	106	52.3	7.1	5	4	
D89424		49.0	21.3	3	21	15.0	83	47.4	6.7	5	4	
D89538		47.4	22.3	14	9	15.5	94	46.2	6.4	4	4	
D89-346		48.6	22.0	8	12	15.3	97	46.8	6.8	5	4	
D89476		51.7	24.2	11	10	16.0	98	50.6	6.7	7	4	

DEFICIENCIES TW KW SM WP SX
 AVG OF STANDARDS 49.3 22.0 17 16.1 47.6
 MINOR FAULTING VALUES 47.1 19.9 22 12.5 44.6
 MAJOR FAULTING VALUES 46.2 16.9 27 11.5 43.6

***EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

TABLE 3
QUALITY DATA OF DURUM SAMPLES 1993 CROP
STATE=SOUTH DAKOTA STATION=SELBY NURSERY=UNIFORM

VARIETY	STD	TEST WT #/BU	TEST 1000 SIZING			WHT %	HARD PRO NESS %	SEMO EXTR %	DUST COLOR	MIXO TW	SCORE SM	DEFICIENCIES WP SX
			K.WT G.	LG %	SM %							
MINDUM		58.4	28.8	11	9	13.0	93	53.5	6.5	2	4	
STOA		51.7	22.0	5	11	14.7	75	52.6	5.6	8	3	MJ
WARD	S	57.1	30.6	15	5	13.7	110	50.3	6.9	2	4	
RUGBY		57.7	31.5	18	5	13.3	116	50.6	6.9	2	4	
VIC	S	56.6	30.1	17	5	13.7	104	51.6	7.0	6	4	
LLOYD	S	49.3	24.0	2	17	15.3	117	44.9	7.0	8	2	
MONROE		56.1	34.8	27	4	13.0	107	55.4	7.0	5	4	
RENVILLE		56.2	27.2	4	13	13.7	108	54.1	6.9	6	4	
MEDORA	S	55.0	28.5	13	6	14.7	113	47.1	7.1	6	4	
SCEPTRE		55.3	28.6	19	6	13.5	105	51.3	6.7	5	4	
D87122		55.8	31.1	22	4	13.9	102	51.3	7.0	5	4	
D87130		55.9	36.1	35	3	13.3	109	50.6	6.8	4	4	
D87240		51.4	28.2	21	5	14.4	105	48.7	7.2	7	4	MJ
D87436		56.1	27.9	8	9	13.6	109	51.6	7.1	6	4	
D87450		53.5	26.8	6	10	12.8	89	52.6	7.1	6	4	
D88273		56.4	28.2	7	8	14.7	114	48.7	7.0	8	4	
D88289		55.9	29.1	11	6	13.4	96	49.4	7.2	6	4	
D88303		56.2	32.4	21	5	13.2	109	50.3	6.8	6	4	
D88450		53.4	25.3	7	13	14.0	98	47.1	6.8	6	4	
D88793		52.4	27.4	9	6	15.3	113	47.5	7.1	8	4	
D89008		55.8	27.4	5	11	13.5	105	53.8	7.1	5	4	
D89111		55.2	28.9	22	5	14.5	105	48.4	7.3	6	4	
D89135		56.8	29.2	15	7	14.4	106	52.2	7.2	6	4	
D89172		55.7	27.0	13	9	14.1	105	50.3	7.1	7	4	
D89235		55.7	26.7	9	7	13.5	105	54.5	7.1	5	4	
D89263		57.6	29.0	7	8	13.3	103	56.1	7.2	6	4	
D89331		59.1	32.7	19	5	12.1	96	58.6	7.0	4	3	MJ
D8460		55.7	26.7	13	8	13.7	102	54.5	7.1	4	4	
D89424		53.0	27.2	3	13	13.5	108	53.5	6.9	4	4	
D89538		50.6	25.1	19	6	14.7	94	45.9	6.6	4	3	
D89-346		54.3	27.7	13	8	13.9	101	49.4	6.9	5	4	
D89476		56.1	32.4	24	5	13.6	104	52.9	6.8	4	4	

DEFICIENCIES
AVG OF STANDARDS 54.5 28.3 8 14.4 48.5
MINOR FAULTING VALUES 52.3 26.2 13 12.5 45.5
MAJOR FAULTING VALUES 51.4 23.2 18 11.5 44.5

***EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

TABLE 4
QUALITY DATA OF DURUM SAMPLES 1993 CROP
STATE=MONTANA STATION=BOZEMAN NURSERY=UNIFORM

VARIETY	STD	TEST WT #/BU	1000 SIZING			WHT %	HARDNESS %	SEMO EXTR %	DUST COLOR	MIXO	SCORE	DEFICIENCIES TW KW SM WP SX ***
			K.WT G.	LG %	SM %							
MINDUM		57.7	34.4	34	4	11.5	103	50.3	5.9	2	1	MJ MJ
STOA		58.1	33.4	62	1	12.1	88	53.2	5.5	4	2	MJ MJ
WARD	S	62.7	42.9	60	2	13.4	115	57.3	6.6	2	4	MI MI
RUGBY		62.3	39.7	54	2	12.8	109	55.4	6.6	1	4	MI
VIC	S	62.2	48.8	77	1	12.9	113	56.9	6.6	3	4	MI
LLOYD	S	55.5	42.7	58	1	10.9	100	45.9	5.9	3	1	MJ MJ
MONROE		61.0	45.5	69	1	12.2	103	57.7	6.7	4	3	MI MI
RENVILLE		58.2	37.7	43	3	12.2	101	52.9	6.4	3	2	MJ MI
MEDORA	S	58.4	38.8	53	2	12.6	108	50.6	6.6	3	4	MI MI
SCEPTRE		50.7	31.4	46	4	12.5	93	48.1	6.1	3	1	MJ MJ
D87122		62.8	47.8	83	0	12.9	115	54.8	6.4	3	4	MI
D87130		62.0	47.1	76	1	12.5	107	53.2	6.3	3	3	MI
D87240		59.4	50.8	87	0	12.0	113	50.0	6.5	3	3	MI
D87436		59.6	46.9	80	0	11.3	109	47.8	6.3	2	1	MJ MJ
D87450		59.0	48.5	71	1	10.4	117	50.0	6.6	2	2	MJ MJ
D88273		61.8	45.7	81	0	12.8	116	49.0	6.7	4	3	MI
D88289		62.2	44.6	81	0	12.8	113	53.5	6.8	4	4	MI
D88303		57.8	37.2	48	2	11.3	98	50.0	6.6	3	3	MI
D88450		62.6	44.2	75	1	11.0	105	53.2	6.4	2	2	MI
D88793		57.0	38.5	63	2	12.1	102	52.6	6.6	2	3	MI MI
D89008		60.1	41.3	56	2	12.4	101	55.4	6.7	5	3	MI
D89111		61.5	48.1	83	1	12.9	114	51.9	6.8	5	4	MI
D89135		61.3	43.9	77	1	13.0	108	53.2	6.9	5	4	MI
D89172		60.0	44.2	73	1	12.4	116	51.0	6.6	4	3	MI
D89235		61.3	45.5	77	1	12.4	105	53.5	6.7	4	3	MI
D89263		61.8	46.5	73	1	13.1	104	51.0	6.6	5	4	MI
D89331		63.0	48.8	71	1	12.4	108	56.1	6.5	4	3	MI
D8460		61.4	41.7	71	1	11.2	110	52.2	6.6	3	2	MJ
D89424		59.6	42.2	52	3	11.1	105	52.3	6.4	3	2	MJ
D89538		60.3	55.6	90	0	11.3	111	51.0	6.3	2	2	MJ
D89-346		60.5	51.8	87	0	11.5	110	50.6	6.3	4	2	MJ
D89476		60.6	44.4	74	1	12.6	102	50.6	6.4	3	3	MI

DEFICIENCIES	TW	KW	SM	WP	SX
Avg of Standards	59.7	43.3	2	12.5	52.7
Minor Faulting Values	57.5	41.2	7	12.5	49.7
Major Faulting Values	56.6	38.2	12	11.5	48.7

*** EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

TABLE 5
QUALITY DATA OF DURUM SAMPLES
STATE=MONTANA STATION=SIDNEY CROP
1993 NURSERY=UNIFORM

VARIETY	STD	TEST WT #/BU	1000 SIZING			WHT PRONESS %	SEMO EXTR %	DUST COLOR	MIXO	SCORE ***	DEFICIENCIES TW KW SM WP SX
			K.WT G.	L.G.	SM %						
MINDUM		58.6	34.4	33	3	12.3	103	58.0	6.3	3	3 MI
STOA		57.2	33.6	50	1	13.1	73	62.6	5.6	7	4 MI
WARD	S	59.0	36.8	43	2	13.7	115	53.8	6.6	1	4 MI
RUGBY		58.4	35.2	33	3	12.1	102	55.8	6.6	1	3 MI
VIC	S	57.2	35.7	32	3	12.6	102	55.1	6.7	2	4 MI
LLOYD	S	55.1	35.6	23	5	12.5	105	51.9	6.8	2	3 MI
MONROE		57.5	38.2	39	2	12.0	99	55.1	6.7	2	3 MI
RENNIVILLE		58.2	33.9	19	5	12.4	103	54.8	6.5	2	3 MI
MEDORA	S	58.1	36.4	49	2	12.1	106	53.5	6.8	2	3 MI
SCEPTERE		56.1	37.2	47	3	12.2	101	54.8	6.5	2	3 MI
D87122		59.0	37.9	52	1	13.2	100	55.1	6.7	3	4 MI
D87130		60.1	40.8	61	1	12.3	106	54.1	6.6	2	3 MI
D87240		54.5	37.3	47	1	12.5	100	51.9	6.8	3	3 MI
D87436		55.9	33.7	36	3	12.7	103	49.0	6.8	3	2 MI
D87450		56.1	37.5	29	3	11.9	95	53.8	6.9	3	3 MJ
D88273		58.2	36.2	29	2	12.9	110	53.2	6.7	3	4 MI
D88289		58.3	34.0	27	3	13.0	102	49.7	7.0	3	3 MI
D83303		59.4	40.5	55	2	12.5	107	51.9	6.6	3	3 MI
D88450		57.0	35.1	45	4	12.6	97	50.3	6.6	3	3 MI
D88793		57.7	36.5	47	2	13.3	119	49.7	6.8	3	3 MI
D89008		57.4	35.0	22	4	11.9	98	52.9	6.9	3	3 MI
D89111		59.2	41.3	65	1	12.9	114	51.6	7.0	3	4 MI
D89135		58.6	36.5	45	2	12.5	101	52.9	7.0	4	3 MI
D89172		58.7	38.3	58	2	12.4	103	50.6	7.0	3	3 MI
D89235		58.4	36.4	41	2	11.9	102	50.9	6.8	3	3 MI
D89263		59.5	37.9	40	3	12.7	101	49.7	6.8	3	3 MI
D89331		59.9	42.4	50	3	11.8	104	54.1	6.7	2	3 MI
D8460		57.8	36.0	39	3	12.7	103	53.5	6.8	2	4 MI
D89424		56.9	35.5	29	4	11.7	97	53.5	6.6	2	3 MI
D89538		55.5	35.8	59	2	12.5	95	50.0	6.5	2	2 MI
D89-346		59.0	42.0	57	2	12.3	107	51.0	6.8	3	2 MI
D89476		57.8	37.7	45	3	12.2	100	49.7	6.5	3	2 MI

DEFICIENCIES
AVG OF STANDARDS 57.4 36.1 3 12.7 53.6
MINOR FAULTING VALUES 55.2 34.0 3 12.5 50.6
MAJOR FAULTING VALUES 54.3 31.0 13 11.5 49.6

***EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

TABLE 6
QUALITY DATA OF DURUM SAMPLES 1993 CROP
STATE=NORTH DAKOTA STATION=DICKINSON NURSERY=UNIFORM

VARIETY	STD	TEST WT #/BU	1000 K.WT G.			SIZING LG %			WHT PRO NESS 14%			DUST COLOR %			MIXO SEM EXTR %			DEFICIENCIES TW KW SM WP SX		
MINDUM		61.8	41.8	56	2	13.9	117		51.9	6.3		2	4							
STOA	S	54.2	29.5	29	3	14.0	77		55.2	5.6		7	3							
WARD	S	58.5	38.6	48	2	14.1	107		53.5	6.8		2	4							
RUGBY		59.8	37.5	49	2	13.8	117		55.1	6.9		2	4							
VIC	S	58.7	40.3	47	1	14.0	109		56.1	7.0		5	4							
LLOYD	S	50.6	31.1	9	8	14.9	99		48.7	6.9		5	1							
MONROE		55.5	36.2	32	4	14.3	108		52.3	7.0		4	4							
RENVILLE		58.7	34.2	9	5	14.0	116		56.7	6.9		4	4							
MEDORA	S	57.4	36.2	48	2	14.8	113		55.1	7.1		4	4							
SCEPTERE		58.0	35.1	43	3	13.2	103		56.4	6.8		4	4							
D87122		56.1	34.8	38	3	14.5	113		53.5	6.9		4	4							
D87130		59.5	42.7	67	1	14.1	109		52.9	6.8		4	4							
D87240		52.1	33.3	36	3	14.9	108		51.0	7.1		6	3							
D87436		54.5	28.7	14	7	13.9	104		50.3	7.1		4	2							
D87450		51.8	29.2	8	7	13.8	101		51.3	7.1		6	2							
D88273		53.3	28.4	9	6	15.4	113		51.3	7.1		8	3							
D88289		53.6	29.2	11	5	15.1	119		49.0	7.3		8	1							
D88303		56.6	34.8	31	3	14.0	106		53.2	7.0		5	4							
D88450		55.0	28.2	13	6	14.1	105		46.8	6.8		5	1							
D88793		56.1	34.5	37	3	14.7	111		52.6	7.1		5	4							
D89008		56.1	31.4	11	6	14.0	115		52.9	7.1		5	3							
D89111		57.7	36.4	45	2	14.2	105		51.3	7.3		5	4							
D89135		57.4	35.5	41	2	14.8	99		56.7	7.3		6	4							
D89172		56.1	32.4	33	3	14.0	111		51.3	7.2		5	4							
D89235		58.7	37.2	41	2	13.3	102		53.8	7.1		4	4							
D89263		57.7	32.8	25	4	13.9	103		50.3	7.1		4	3							
D89331		59.0	41.3	45	1	13.5	111		54.1	7.0		4	4							
D8460		56.1	34.5	33	3	14.1	103		53.5	7.2		4	4							
D89424		54.0	34.0	17	5	13.9	105		52.2	6.9		4	4							
D89538		49.9	27.3	19	6	14.9	96		45.5	6.7		4	1							
D89-346		57.2	38.3	41	2	13.2	103		52.9	7.0		4	4							
D89476		57.0	36.6	43	3	14.6	104		51.0	6.7		4	4							

DEFICIENCIES
AVG OF STANDARDS
MINOR FAULTING VALUES
MAJOR FAULTING VALUES

TW	KW	SM	WP	SX
56.3	36.6	3	14.5	53.4
54.1	34.5	8	12.5	50.4
53.2	31.4	13	11.5	49.4

***EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

TABLE 7

QUALITY DATA OF DURUM SAMPLES 1993 CROP
STATE=NORTH DAKOTA STATION=CARRINGTON NURSERY=UNIFORM

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING			WHITENESS PRO %	HARDNESS SEMO EXTR %	DUST COLOR	MIXO SCORE ***	DEFICIENCIES			
				LG %	SM %	14%					TW	KW	SM	WP	SX
MINDUM		51.9	22.3	6	15	15.4	103	49.8	6.6	4	4			
STOA	S	50.8	20.7	13	9	15.2	69	56.5	5.7	8	4			MI
WARD	S	55.8	29.7	14	7	14.6	117	54.2	7.1	3	4			
RUGBY		55.7	27.6	9	7	14.0	106	53.7	7.1	2	4			
VIC	S	53.2	24.2	4	11	15.5	105	52.2	7.3	5	4			
LLOYD	S	41.1	18.2	2	32	18.3	104	41.1	6.8	5	1	MJ	MJ	MJ
MONROE		50.0	27.0	6	9	14.6	103	51.8	7.0	5	4			
RENVILLE	S	52.7	22.0	2	21	16.1	113	53.8	7.0	6	4			
MEDORA	S	49.4	21.7	2	15	17.1	108	47.7	7.2	6	4			
SCEPTRE		51.4	24.0	8	11	15.7	101	49.4	6.9	6	4			
D87122		52.1	23.3	5	10	15.4	106	52.9	6.9	6	4			
D87130		55.5	30.0	17	5	14.0	103	55.0	7.0	5	4			
D87240		48.8	25.3	8	8	16.2	104	50.2	7.2	8	4			
D87436		49.0	20.6	2	23	16.0	108	47.3	7.1	8	4	MI	MI	MI
D87450		46.3	21.3	1	27	15.7	104	47.6	6.9	7	2	MJ	MJ	MJ
D88273		50.7	23.3	2	13	16.4	106	50.8	7.1	8	4			
D88289		48.9	22.7	2	15	16.1	110	49.1	7.2	8	4			
D88303		50.8	24.6	4	16	14.6	106	50.5	7.0	6	4			
D88450		50.0	21.7	3	17	15.1	94	45.6	6.7	6	3			
D88793		50.6	23.1	6	10	17.1	108	46.6	7.1	7	4			
D89008		52.7	23.3	1	19	14.9	106	53.1	7.3	5	4			
D89111		53.4	27.2	19	5	15.4	103	51.7	7.4	4	4			
D89135		52.5	26.0	5	10	15.6	109	52.5	7.3	7	4			
D89172		50.8	23.4	9	10	14.9	109	51.1	7.3	7	4			
D89235		54.6	23.5	5	10	14.9	105	51.7	7.4	6	4			
D89263		52.9	23.3	2	15	15.7	107	49.8	7.3	8	4			
D89331		54.5	27.7	7	9	14.5	117	52.7	7.2	5	4			
D8460		53.3	23.5	4	11	15.3	108	52.5	7.4	5	4			
D89424		46.3	20.4	1	29	16.3	99	45.1	6.9	5	1	MJ	MI	MI
D89538		45.7	21.3	7	11	15.8	98	43.9	6.8	6	1	MJ	MI	MJ
D89-346		49.4	22.2	3	15	16.4	102	47.2	6.9	7	4			
D89476		51.6	24.3	4	9	16.4	107	48.8	6.9	7	4			

DEFICIENCIES
AVG OF STANDARDS 49.9 23.5 16 16.4 48.8
MINOR FAULTING VALUES 47.7 21.3 21 12.5 45.8
MAJOR FAULTING VALUES 46.8 18.3 26 11.5 44.8

***EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

TABLE 8
QUALITY DATA OF DURUM SAMPLES 1993 CROP
STATE=NORTH DAKOTA STATION=WILLISTON NURSERY=UNIFORM

VARIETY	STD	TEST WT #/BU	1000 SIZING			WHT %	HARDNESS %	SEMO EXTR %	DUST COLOR	MIXO SCORE ***	DEFICIENCIES TW KW SM WP SX		
			K.WT G.	LG %	SM %								
MINDUM		63.2	44.6	72	1	12.6	120	55.7	6.3	1	4		
STOA	S	59.1	34.1	54	1	13.9	81	60.6	5.6	5	3	MJ	
WARD	S	61.6	43.9	71	1	13.6	127	54.1	6.8	1	4		
RUGBY	S	62.0	42.2	68	1	13.7	124	53.5	6.8	1	4		
VIC	S	61.3	44.1	73	1	13.5	122	53.5	6.9	2	4	MI	
LLOYD	S	57.6	40.3	53	3	13.3	120	51.9	7.0	3	4		
MONROE	S	59.7	43.7	70	2	13.0	114	52.2	6.8	2	4		
RENVILLE	S	61.8	41.7	57	1	13.5	125	54.1	6.7	2	4		
MEDORA	S	60.7	41.2	72	1	13.5	119	51.0	6.8	2	4		
SCEPTE	S	59.8	41.2	63	1	13.1	119	53.5	6.7	5	4		
D87122		60.6	40.8	72	1	13.7	119	49.0	6.9	5	3	MI	
D87130		61.4	45.5	81	1	13.7	122	50.6	6.7	4	4		
D87240		59.4	45.0	54	1	13.2	117	50.6	7.1	4	4		
D87436		60.5	43.7	71	1	13.4	116	52.2	6.9	4	4		
D87450		57.0	36.8	43	3	12.7	112	50.6	7.1	4	2	MJ	
D88273		60.9	40.0	57	1	13.5	120	53.2	6.9	4	4	MI	
D88289		60.1	35.8	48	3	13.5	117	51.9	7.1	4	3	MJ	
D88303		60.5	42.6	63	1	12.4	122	50.0	6.8	4	3	MI	
D88450		59.0	37.6	57	5	13.0	110	51.0	6.7	4	4	MI	
D88793		60.6	42.0	69	1	13.8	123	52.2	7.0	4	4		
D89008		60.4	40.0	47	3	12.8	118	52.6	7.0	4	4	MI	
D89111		60.6	42.7	78	1	13.1	114	48.7	7.2	4	3	MI	
D89135		61.4	42.4	70	1	13.6	117	52.6	7.2	5	4		
D89172		60.9	39.1	65	1	12.5	114	53.5	7.2	5	3	MI	
D89235		61.3	40.0	66	1	12.4	117	54.2	7.1	3	3	MI	
D89263		60.3	40.5	54	2	13.5	109	45.5	7.0	4	2	MI	
D89331		61.6	46.9	71	2	12.9	121	51.3	7.0	3	4		
D8460		60.6	39.2	61	1	13.1	115	54.8	7.0	3	4	MI	
D89424		57.9	37.5	42	4	12.6	109	52.3	6.8	3	4	MI	
D89538		57.2	38.3	62	1	13.1	105	51.0	6.6	5	4	MI	
D89-346		61.3	44.4	73	1	12.0	100	50.6	6.9	3	3	MI	
D89476		60.3	42.6	71	1	13.6	117	49.7	6.8	5	4		

DEFICIENCIES	TW	KW	SM	WP	SX
Avg of Standards	60.3	42.4	2	13.5	52.6
Minor Faulting Values	58.1	40.3	7	12.5	49.6
Major Faulting Values	57.2	37.3	12	11.5	48.6

*** EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

TABLE 9
QUALITY DATA OF DURUM SAMPLES 1993 CROP
STATE=NORTH DAKOTA STATION=LANGDON NURSERY=UNIFORM

VARIETY	STD #/BU	TEST WT G.	1000			SIZING		WHT PRO %	HARD NESS %	SEMO EXTR %	DUST COLOR	MIXO	DEFICIENCIES	
			K.WT G.	LG %	SM %	WHT %	PRO %							
MINDUM	49.7	23.0	7	11	15.4	91	43.9	6.2	3	4	MI			
STOA	47.0	21.1	8	11	16.2	70	44.5	5.5	8	4	MI	MI		
WARD	S	53.6	35.8	19	5	14.8	103	47.1	6.7	2	4			
RUGBY		53.4	25.6	14	7	14.2	100	47.7	6.7	2	4			
VIC	S	50.3	25.2	9	9	14.9	104	50.3	6.8	5	4			
LLOYD	S	44.8	17.8	1	32	17.2	99	39.7	6.7	8	1	MJ	MJ	MJ
MONROE		50.8	29.7	24	4	14.2	97	53.2	6.6	4	4			
RENNVILLE		49.9	22.5	2	18	15.2	100	48.1	6.6	7	4	MI		
MEDORA	S	49.5	22.9	6	10	15.8	104	45.5	6.8	7	4	MI		
SCEPTRE		49.9	25.3	17	9	15.3	103	49.4	6.4	8	4			
D87122		50.3	23.8	13	7	15.5	94	50.3	6.6	8	4			
D87130		52.4	27.2	21	5	14.7	101	50.0	6.5	6	4			
D87240		56.0	22.8	14	7	16.0	97	43.6	6.7	8	4			
D87436		45.1	18.3	1	25	15.6	97	42.3	6.8	7	1	MJ	MJ	MJ
D87450		44.8	20.3	1	23	14.6	88	41.1	6.6	5	1	MI	MI	MI
D88273		51.2	22.1	1	11	16.4	95	41.9	6.7	8	3	MI		MI
D88289		48.2	21.0	3	14	15.5	93	43.9	6.8	8	4	MI		
D88303		47.2	22.7	5	15	15.3	99	43.6	6.6	6	4	MI	MI	
D88450		45.4	19.3	5	15	15.6	82	40.6	6.5	6	1	MJ	MJ	MJ
D88793		49.2	25.3	13	8	16.1	108	44.3	6.7	6	4			
D89008		48.7	22.2	3	19	14.8	91	52.2	6.7	6	4	MI	MI	
D89111		48.6	23.1	19	5	16.1	92	46.8	6.9	5	4			
D89135		48.8	22.0	5	12	15.8	95	49.4	6.9	7	4	MI		
D89172		49.9	21.9	14	8	15.3	97	49.0	6.8	6	4	MI		
D89235		49.7	22.8	7	10	15.0	99	48.4	6.8	6	4	MI		
D89263		50.7	22.0	2	17	15.1	95	50.0	6.7	7	4	MI		
D89331		49.4	23.9	7	11	15.7	96	48.4	6.7	8	4			
D8460		53.0	25.7	7	7	14.5	98	54.1	6.8	4	4			
D89424		44.0	18.5	1	32	15.5	88	41.0	6.5	8	1	MJ	MJ	MJ
D89538		42.3	18.5	6	17	15.7	84	40.1	6.3	5	1	MJ	MJ	MJ
D89-346		47.9	22.2	5	15	15.8	98	46.5	6.6	7	4	MI		
D89476		50.2	24.5	12	9	16.1	95	47.8	6.5	7	4			

DEFICIENCIES
 *AVG OF STANDARDS
 MINOR FAULTING VALUES
 MAJOR FAULTING VALUES

49.6 25.4 14 15.7 45.7
 47.3 23.3 19 12.5 42.7
 46.5 20.3 24 11.5 41.7

***EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

TABLE 10

QUALITY DATA OF DURUM SAMPLES 1993 CROP
STATE=SASK. STATION=SWIFT CURRENT NURSERY=UNIFORM

VARIETY	STD	TEST		SIZING			WHT PRO NESS 14%	SEMO EXTR %	DUST COLOR	MIXO	SCORE ***	DEFICIENCIES TW KW SM WP SX
		WT #/BU	K.WT G.	1000 LG	SM	LG						
MINDUM		63.7	46.5	75	0	8.5	88	63.0	6.1	0	2	MJ
STOA		60.9	35.6	58	1	9.6	61	60.0	5.6	3	1	MJ
WARD	S	62.2	47.1	77	1	9.9	108	58.5	6.5	0	2	MJ
RUGBY		61.9	45.2	71	1	9.8	100	58.6	6.6	0	2	MJ
VIC	S	62.3	49.8	79	0	9.3	93	61.1	6.7	1	2	MJ
LLOYD	S	61.0	48.8	76	0	8.4	89	57.8	6.7	1	2	MJ
MONROE		61.4	50.3	78	0	9.0	90	61.0	6.7	1	2	MJ
RENVILLE		61.0	42.2	65	1	8.5	80	63.0	6.4	1	1	MJ
MEDORA	S	62.4	46.9	81	0	9.9	111	58.3	6.8	1	2	MJ
SCEPTE		59.5	42.9	73	1	8.9	88	61.5	6.5	1	1	MJ
D87122		62.0	48.3	85	0	9.5	94	59.6	6.7	1	2	MJ
D87130		61.8	48.8	87	0	8.8	88	59.9	6.5	0	2	MJ
D87240		59.8	48.1	78	0	8.9	85	59.6	6.7	0	2	MJ
D87436		62.7	47.6	81	0	8.7	99	58.0	6.7	0	2	MJ
D87450		59.5	45.7	66	1	8.3	78	58.5	6.7	0	2	MJ
D88273		62.2	45.5	71	1	9.7	105	58.0	6.8	0	2	MJ
D88289		63.0	42.4	71	1	9.8	105	57.1	6.9	1	2	MJ
D88303		62.1	50.8	82	0	9.1	100	59.6	6.7	1	2	MJ
D88450		61.4	44.6	75	1	8.1	74	60.9	6.4	0	2	MJ
D88793		62.0	48.8	79	1	9.6	103	58.6	7.0	1	2	MJ
D89008		60.5	45.0	69	0	8.5	80	62.7	6.7	0	2	MJ
D89111		61.8	46.7	85	0	8.6	85	59.2	6.9	0	2	MJ
D89135		62.9	48.1	82	0	9.4	94	59.2	7.0	1	2	MJ
D89172		61.8	45.0	77	0	8.8	89	61.1	6.8	1	2	MJ
D89235		60.9	46.7	79	0	8.8	79	63.9	6.7	0	2	MJ
D89263		63.1	46.5	72	0	9.5	91	58.0	6.7	2	2	MJ
D89331		61.8	52.4	85	0	8.1	82	62.2	6.5	1	2	MJ
D8460		60.5	42.4	70	1	9.1	88	59.6	6.8	1	1	MJ
D89424		60.7	47.1	80	1	7.8	66	63.2	6.4	0	2	MJ
D89538		60.1	51.5	88	0	8.8	82	58.0	6.4	1	2	MJ
D89-346		63.4	53.5	89	0	8.3	93	58.6	6.6	1	2	MJ
D89476		62.8	47.6	79	0	9.2	96	57.0	6.7	1	2	MJ

DEFICIENCIES
AVG OF STANDARDS
MINOR FAULTING VALUES
MAJOR FAULTING VALUES

TW KW SM WP SX
62.0 48.2 0 9.4 58.9
59.8 46.0 5 12.5 55.9
58.9 43.0 10 11.5 54.9

***EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

Table 11

WARD n=9						VIC n=9						SCEPTR n=9						RENVILLE n=9					
	MEAN	SD	MIN	MAX.	RANGE		MEAN	SD	MIN	MAX.	RANGE		MEAN	SD	MIN	MAX.	RANGE		MEAN	SD	MIN	MAX.	RANGE
Test Wt.	58.2	3.50	53.6	62.7	9.1		56.8	4.84	49.8	62.3	12.5		54.5	4.13	49.7	59.8	10.1		56.3	4.41	49.9	61.8	11.9
1000 Ker Wt	36.8	7.20	25.5	47.1	21.6		35.6	10.65	22.6	49.8	27.2		32.0	7.57	22.1	42.9	20.8		31.4	8.44	21.0	42.2	21.2
Wht. Protein 14%	13.6	1.46	9.9	14.8	4.9		13.6	1.97	9.3	16.1	6.7		13.3	2.13	8.9	15.7	6.8		13.5	2.37	8.5	16.2	7.7
Hardness	111.2	8.35	99.0	127.0	28.0		105.9	8.16	93.0	122.0	29.0		101.7	8.50	88.0	119.0	31.0		106.6	12.78	80.0	125.0	45.0
Semo. Extraction	53.6	3.33	47.1	58.2	11.1		53.8	4.04	47.4	61.1	13.7		52.4	4.60	47.4	61.5	14.1		54.0	4.37	48.1	63.0	14.9
Semo. Color	6.7	0.18	6.5	7.1	0.6		6.9	0.22	6.6	7.3	0.7		6.6	0.24	6.1	6.9	0.8		6.7	0.21	6.4	7.0	0.6
Mix Pattern	1.8	0.97	0.0	3.0	3.0		4.0	2.06	1.0	7.0	6.0		4.6	2.30	1.0	8.0	7.0		4.3	2.50	1.0	8.0	7.0
STOA n=9						RUGBY n=9						RENVILLE n=9						RENVILLE n=9					
	MEAN	SD	MIN	MAX.	RANGE		MEAN	SD	MIN	MAX.	RANGE		MEAN	SD	MIN	MAX.	RANGE		MEAN	SD	MIN	MAX.	RANGE
Test Wt.	54.2	4.95	47.0	60.9	13.9		54.5	4.13	49.7	59.8	10.1		52.4	4.60	47.4	61.5	14.1		56.3	4.41	49.9	61.8	11.9
1000 Ker Wt	27.7	6.83	19.1	35.6	16.5		32.0	7.57	22.1	42.9	20.8		30.0	7.57	22.1	42.9	20.8		31.4	8.44	21.0	42.2	21.2
Wht. Protein 14%	13.8	2.01	9.6	16.2	6.6		13.3	2.13	8.9	15.7	6.8		11.7	2.50	8.5	16.2	7.7		10.6	12.78	80.0	125.0	45.0
Hardness	73.8	7.76	61.0	88.0	27.0		70.7	8.50	88.0	119.0	31.0		68.5	9.00	88.0	119.0	31.0		67.4	9.50	88.0	119.0	31.0
Semo. Extraction	55.1	5.61	44.5	62.6	18.1		52.4	4.60	47.4	61.5	14.1		50.2	5.00	47.4	61.5	14.1		49.0	5.50	47.4	61.5	14.1
Semo. Color	5.6	0.08	5.5	5.7	0.2		6.6	0.24	6.1	6.9	0.8		6.6	0.24	6.1	6.9	0.8		6.6	0.24	6.1	6.9	0.8
Mix Pattern	6.4	1.94	3.0	8.0	5.0		4.6	2.30	1.0	8.0	7.0		4.6	2.30	1.0	8.0	7.0		4.6	2.30	1.0	8.0	7.0

Table 12

	MONROE n=9				
	MEAN	SD	MIN	MAX.	RANGE
Test Wt.	55.7	4.68	49.5	61.4	11.9
1000 Ker Wt	36.7	8.64	25.0	50.3	25.3
Wht.Protein 14%	13.0	1.85	9.0	14.9	6.0
Hardness	101.3	7.92	90.0	114.0	24.0
Semo. Extraction	54.3	3.46	49.7	61.0	11.4
Semo. Color	6.8	0.14	6.6	7.0	0.4
Mix Pattern	3.7	1.66	1.0	6.0	5.0

MINDUM n=9

	MEAN	SD	MIN	MAX.	RANGE
Test Wt.	57.5	5.12	49.7	63.7	14.0
1000 Ker Wt	33.1	9.66	22.2	46.5	24.3
Wht.Protein 14%	13.1	2.27	8.5	15.5	6.9
Hardness	100.8	11.76	88.0	120.0	32.0
Semo. Extraction	52.9	5.53	43.9	63.0	19.1
Semo. Color	6.3	0.22	5.9	6.6	0.7
Mix Pattern	2.2	1.20	0.0	4.0	4.0

MEDORA n=9

	MEAN	SD	MIN	MAX.	RANGE
Test Wt.	55.6	4.97	49.4	62.4	13.0
1000 Ker Wt	32.8	9.20	21.7	46.9	25.2
Wht.Protein 14%	14.1	2.25	9.9	17.1	7.2
Hardness	110.1	4.48	104.0	119.0	15.0
Semo. Extraction	50.7	4.27	45.5	58.3	12.8
Semo. Color	6.9	0.19	6.6	7.2	0.6
Mix Pattern	4.3	2.50	1.0	8.0	7.0

D89538 n=9

	MEAN	SD	MIN	MAX.	RANGE
Test Wt.	52.1	6.48	42.3	60.3	18.0
1000 Ker Wt	32.9	13.44	18.5	55.6	37.1
Wht.Protein 14%	13.6	2.38	8.8	15.8	7.0
Hardness	95.4	9.06	82.0	111.0	29.0
Semo. Extraction	47.9	5.17	40.1	58.0	17.8
Semo. Color	6.5	0.17	6.3	6.8	0.5
Mix Pattern	3.3	2.00	0.0	6.0	6.0

LLLOYD n=9

	MEAN	SD	MIN	MAX.	RANGE
Test Wt.	51.0	6.80	41.1	61.0	19.9
1000 Ker Wt	30.7	11.88	17.5	48.8	31.3
Wht.Protein 14%	14.3	3.30	8.4	18.3	9.9
Hardness	103.1	9.94	89.0	120.0	31.0
Semo. Extraction	47.1	6.00	39.7	57.8	18.1
Semo. Color	6.7	0.33	5.9	7.0	1.1
Mix Pattern	4.8	2.73	1.0	8.0	7.0

	MEAN	SD	MIN	MAX.	RANGE
Test Wt.	56.5	4.47	50.2	62.8	12.6
1000 Ker Wt	34.9	9.10	24.2	47.6	23.4
Wht.Protein 14%	13.8	2.31	9.2	16.4	7.3
Hardness	102.6	6.71	95.0	117.0	22.0
Semo. Extraction	50.9	2.69	47.8	57.0	9.2
Semo. Color	6.7	0.16	6.4	6.9	0.5
Mix Pattern	4.1	2.62	0.0	7.0	7.0

Table 13

	D89424 n=9				
	MEAN	SD	MIN	MAX.	RANGE
Test Wt.	53.5	5.95	44.0	60.7	16.7
1000 Ker Wt	31.5	10.19	18.5	47.1	28.6
Wht. Protein 14%	13.1	2.65	7.8	16.3	8.6
Hardness	95.6	14.21	66.0	109.0	43.0
Semo. Extraction	51.2	6.26	41.0	63.2	22.2
Semo. Color	6.7	0.22	6.4	6.9	0.5
Mix Pattern	3.3	2.55	0.0	8.0	8.0

D89263 n=9

	D89263 n=9				
	MEAN	SD	MIN	MAX.	RANGE
Test Wt.	57.3	4.49	50.7	63.1	12.4
1000 Ker Wt	33.3	10.13	20.9	46.5	25.6
Wht. Protein 14%	13.7	1.98	9.5	16.2	6.7
Hardness	102.0	5.70	91.0	109.0	18.0
Semo. Extraction	51.0	3.80	45.5	58.0	12.4
Semo. Color	6.9	0.24	6.6	7.3	0.7
Mix Pattern	4.6	2.74	0.0	8.0	8.0

D89172 n=9

	D89172 n=9				
	MEAN	SD	MIN	MAX.	RANGE
Test Wt.	56.3	4.44	49.9	61.8	11.9
1000 Ker Wt	32.6	9.35	21.9	45.0	23.1
Wht. Protein 14%	13.3	2.05	8.8	15.3	6.5
Hardness	104.9	8.68	89.0	116.0	27.0
Semo. Extraction	52.1	3.60	49.0	61.1	12.1
Semo. Color	7.0	0.23	6.6	7.3	0.7
Mix Pattern	4.9	1.96	1.0	7.0	6.0

D89331 n=9

	D89331 n=9				
	MEAN	SD	MIN	MAX.	RANGE
Test Wt.	57.6	5.13	49.4	63.0	13.6
1000 Ker Wt	37.6	11.21	22.5	52.4	29.9
Wht. Protein 14%	12.9	2.31	8.1	15.7	7.6
Hardness	104.0	11.96	82.0	121.0	39.0
Semo. Extraction	53.7	4.92	46.2	62.2	16.0
Semo. Color	6.8	0.23	6.5	7.2	0.7
Mix Pattern	3.9	2.80	0.0	8.0	8.0

D89235 n=9

	D89235 n=9				
	MEAN	SD	MIN	MAX.	RANGE
Test Wt.	57.0	4.14	49.7	61.3	11.6
1000 Ker Wt	33.6	9.57	22.8	46.7	23.9
Wht. Protein 14%	13.0	1.93	8.8	15.0	6.2
Hardness	101.1	10.12	79.0	117.0	38.0
Semo. Extraction	53.5	4.35	48.4	63.9	15.5
Semo. Color	7.0	0.23	6.7	7.4	0.7
Mix Pattern	3.4	2.24	0.0	6.0	6.0

Statistical Evaluation of Uniform Regional Nursery

Table 14

	D89111 n=9				
	MEAN	SD	MIN	MAX.	RANGE
Test Wt.	56.5	4.82	48.6	61.8	13.2
1000 Ker Wt	35.3	9.91	23.1	48.1	25.0
Wht. Protein 14%	13.7	2.27	8.6	16.1	7.5
Hardness	103.4	10.19	85.0	114.0	29.0
Semo. Extraction	50.7	3.85	46.5	59.2	12.7
Semo. Color	7.1	0.22	6.8	7.4	0.6
Mix Pattern	4.3	2.00	0.0	7.0	7.0

D89008 n=9

	D89008 n=9				
	MEAN	SD	MIN	MAX.	RANGE
Test Wt.	55.7	5.91	47.9	63.4	15.5
1000 Ker Wt	36.0	12.81	22.0	53.5	31.5
Wht. Protein 14%	13.2	2.39	8.8	16.4	7.6
Hardness	101.2	5.14	93.0	110.0	17.0
Semo. Extraction	50.4	3.76	46.5	58.6	12.1
Semo. Color	6.7	0.21	6.3	7.0	0.7
Mix Pattern	3.8	2.39	0.0	7.0	7.0

D88793 n=9

	D88793 n=9				
	MEAN	SD	MIN	MAX.	RANGE
Test Wt.	55.0	4.74	49.2	62.0	12.8
1000 Ker Wt	33.3	8.97	23.1	48.8	25.7
Wht. Protein 14%	14.3	2.42	9.6	17.1	7.5
Hardness	111.3	6.98	102.0	123.0	21.0
Semo. Extraction	50.0	4.47	44.3	58.6	14.3
Semo. Color	6.9	0.17	6.6	7.1	0.5
Mix Pattern	4.9	2.57	1.0	8.0	7.0

D88303 n=9

	D88303 n=9				
	MEAN	SD	MIN	MAX.	RANGE
Test Wt.	55.3	5.68	46.7	62.1	15.4
1000 Ker Wt	34.1	9.96	21.1	50.8	29.7
Wht. Protein 14%	13.1	2.01	9.1	15.3	6.2
Hardness	104.8	7.92	96.0	122.0	26.0
Semo. Extraction	50.5	4.60	43.6	59.6	16.0
Semo. Color	6.8	0.16	6.6	7.0	0.4
Mix Pattern	4.6	1.94	1.0	7.0	6.0

Table 15

D882289 n=9					
	MEAN	SD	MIN	MAX.	RANGE
Test Wt.	56.0	5.37	48.2	63.0	14.8
1000 Ker Wt	31.5	8.41	21.0	44.6	23.6
Wht. Protein 14%	13.8	1.91	9.8	16.1	6.3
Hardness	105.7	9.62	93.0	119.0	26.0
Semo. Extraction	50.1	3.71	43.9	57.1	13.2
Semo. Color	7.0	0.17	6.8	7.3	0.5
Mix Pattern	5.4	2.30	2.0	8.0	6.0

D882273 n=9

D882273 n=9					
	MEAN	SD	MIN	MAX.	RANGE
Test Wt.	52.9	5.47	44.8	59.5	14.7
1000 Ker Wt	32.1	10.51	20.3	48.5	28.2
Wht. Protein 14%	12.7	2.28	8.3	15.7	7.4
Hardness	96.7	12.85	78.0	117.0	39.0
Semo. Extraction	50.9	4.73	41.1	58.5	17.4
Semo. Color	6.9	0.19	6.6	7.1	0.5
Mix Pattern	4.2	2.22	0.0	7.0	7.0

D87436 n=9

D87436 n=9					
	MEAN	SD	MIN	MAX.	RANGE
Test Wt.	54.7	6.00	45.1	62.7	17.6
1000 Ker Wt	31.9	11.70	18.3	47.6	29.3
Wht. Protein 14%	13.4	2.32	8.7	16.0	7.3
Hardness	105.0	6.04	97.0	116.0	19.0
Semo. Extraction	49.4	4.37	42.3	58.0	15.7
Semo. Color	6.8	0.24	6.3	7.1	0.8
Mix Pattern	4.3	2.50	0.0	8.0	8.0

D87130 n=9

D87130 n=9					
	MEAN	SD	MIN	MAX.	RANGE
Test Wt.	58.2	3.49	52.4	62.0	9.6
1000 Ker Wt	38.4	8.46	27.2	48.8	21.6
Wht. Protein 14%	13.8	2.40	8.9	13.1	4.9
Hardness	103.6	9.30	85.0	117.0	32.0
Semo. Extraction	50.4	4.22	43.6	59.6	16.0
Semo. Color	6.9	0.25	6.5	7.2	0.7
Mix Pattern	5.1	2.76	0.0	8.0	8.0

Statistical Evaluation of Uniform Regional Nursery

Table 16

D87122 n=9

	MEAN	SD	MIN	MAX.	RANGE
Test Wt.	56.5	4.93	49.9	62.8	12.9
1000 Ker Wt	34.4	10.16	22.0	48.3	26.3
Wht. Protein 14%	13.8	1.90	9.5	15.7	6.1
Hardness	104.8	9.09	94.0	119.0	25.0
Semo. Extraction	52.7	3.61	47.7	59.6	11.9
Semo. Color	6.8	0.18	6.4	7.0	0.6
Mix Pattern	4.7	2.18	1.0	8.0	7.0

	MEAN	SD	MIN	MAX.	RANGE
Test Wt.	56.9	3.37	53.0	61.4	8.4
1000 Ker Wt	32.8	7.52	23.5	42.4	18.9
Wht. Protein 14%	13.2	1.98	9.1	15.3	6.3
Hardness	103.7	7.70	88.0	115.0	27.0
Semo. Extraction	54.1	2.27	52.2	59.6	7.4
Semo. Color	7.0	0.26	6.6	7.4	0.8
Mix Pattern	3.0	1.73	0.0	5.0	5.0

TABLE 17

QUALITY DATA OF DURUM SAMPLES 1993 CROP
STATE=CALIFORNIA STATION=IMPERIAL VALLEY NURSERY=ADVANCED

VARIETY	STD #/BU	TEST WT	1000 SIZING			WHT PRO %	HARDNESS %	FALL NO SEC	TOTL EXTR %	SEMO EXTR %	SEMO SPK	DUST ASH %	COLOR	MIXO SCORE	
			K.WT G.	LG %	SM %										
YECORA ROJO	63.4	40.0	55	3	1.62	12.0	92	421	70.3	53.3	-	0.52	5.70	5	
MEXICALI 75	62.9	50.3	81	1	1.85	11.8	139	405	78.9	61.7	-	0.77	7.10	5	
ALDURA	64.5	45.2	58	1	1.76	11.6	143	450	80.3	58.3	-	0.70	7.40	2	
YAVAROS 79	66.6	58.5	88	1	1.64	10.6	135	425	77.8	61.6	-	0.83	6.00	2	
WESTBRED 881	S	62.8	51.5	78	1	1.83	12.4	131	500	77.3	60.3	-	0.72	7.20	5
WESTBRED TURBO		64.7	57.3	90	1	1.63	10.7	128	417	78.8	61.9	-	0.65	6.90	2
NUDURA		64.8	51.5	80	1	1.80	11.7	147	494	80.6	62.2	-	0.74	7.30	4
REVA		64.1	50.5	77	1	2.01	12.0	132	470	79.6	62.7	-	0.80	7.20	4
DUREX		63.3	51.5	84	1	1.73	12.4	143	489	78.9	61.9	-	0.70	7.20	4
FMC 5456		64.8	51.3	77	2	1.78	11.5	140	399	79.9	64.0	-	0.72	7.00	2
UC 907		64.4	53.5	85	1	1.92	12.7	134	410	80.9	63.9	-	0.83	7.10	3
UC 908		64.1	54.6	85	1	1.94	12.7	140	402	80.9	64.1	-	0.85	7.00	3
UC 910		66.5	46.7	80	1	1.89	12.3	143	397	80.5	63.1	-	0.80	7.40	2
WPB 8001		64.3	54.6	89	1	1.74	11.1	130	405	78.2	62.5	-	0.73	7.20	3
WPB 8003		61.7	54.9	88	1	1.91	12.9	143	407	79.5	61.3	-	0.85	7.00	5
FMC 5476		63.5	47.4	66	2	1.79	11.2	127	421	79.9	59.3	-	0.79	7.50	4
FMC 8869		63.3	49.5	66	1	1.81	11.9	145	459	75.1	59.1	-	0.67	7.30	4
ALDENTE		63.0	51.0	77	2	1.74	12.3	137	444	74.5	57.2	-	0.65	7.20	4
WPB 8005		64.0	50.3	80	1	1.86	11.7	127	407	75.1	57.3	-	0.66	6.60	4
WPB 8008		63.1	54.1	80	1	1.77	11.8	133	421	75.2	58.4	-	0.66	7.50	6
KRONAS		63.5	54.6	85	1	1.85	11.9	133	489	75.0	57.4	-	0.65	7.50	4
CONCORDE		64.9	44.8	67	2	1.72	11.9	145	439	76.9	58.4	-	0.60	7.40	4
OCOTILLO		64.1	51.5	78	1	1.85	12.5	141	458	76.3	58.6	-	0.62	7.10	5
WPB 8009		63.9	43.1	60	2	1.71	11.3	127	458	77.0	59.5	-	0.65	7.60	6
FMC 7172A		64.0	43.3	59	2	1.83	12.3	138	465	79.6	60.9	-	0.69	6.90	4
FMC 5237-1		63.4	50.0	76	1	1.82	11.8	131	480	79.2	61.3	-	0.70	7.30	5
FMC 5318		63.4	44.1	61	2	1.90	11.9	141	473	80.3	60.8	-	0.77	7.50	4
FMC 5666		63.1	51.3	82	1	1.80	12.5	130	509	77.7	60.5	-	0.66	7.20	5
UC 988		66.4	57.1	89	1	1.78	12.0	135	455	79.0	62.2	-	0.68	6.90	3
UC 989		63.2	50.3	73	2	1.86	11.6	131	467	78.9	61.6	-	0.71	7.40	4
APB 91-PS-1		63.4	38.3	49	3	1.86	12.0	133	420	80.5	61.3	-	0.74	6.90	4
APB FC#6		65.0	49.8	80	0	1.76	11.8	136	434	80.8	62.6	-	0.69	7.10	4
TITAN		65.9	54.3	87	1	1.63	12.3	164	406	79.5	62.0	-	0.65	6.40	3

QUALITY DATA OF DURUM SAMPLES 1993 CROP
STATE=CALIFORNIA STATION=IMPERIAL VALLEY NURSERY=ADVANCED

TABLE 17 CONTD

VARIETY	STD	PRO	COL	WT	COOK	FIRM- NESS	RES	SCORE **	DEFICIENCIES							
									G.	S	TW	KW	SM	WP	TX	
YECORA ROJO	11.2	6.10	32.5	4.97	5.3	1	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	
MEXICALI 75	10.6	7.80	33.9	5.08	7.1	1	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	
ALDURA	10.1	8.30	34.5	5.16	6.8	1	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	
YAVAROS 79	9.4	7.40	33.8	4.58	7.2	1	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	
WESTBRED 881	S	10.3	8.20	31.2	6.20	6.6	2	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
WESTBRED TURBO	9.	8.10	32.8	5.46	7.3	1	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
NUDURA	10.0	8.40	33.6	5.77	7.0	2	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
REVA	10.9	8.10	32.8	5.53	6.9	2	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
DUREX	10.8	8.10	32.3	7.02	6.9	2	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
FMC 5456	10.6	7.60	32.3	6.24	7.3	1	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
UC 907	10.9	7.60	31.8	6.76	7.1	1	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
UC 908	10.9	7.50	31.8	7.41	7.5	1	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
UC 910	10.9	8.20	32.4	5.44	7.1	2	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
WPB 8001	9.9	8.00	32.3	5.49	6.8	2	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
WPB 8003	11.6	.	.	.	.	.	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
FMC 5476	10.5	8.10	31.2	5.70	7.3	2	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
FMC 8869	10.6	8.40	31.6	5.70	7.3	2	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
ALDENTE	10.7	8.40	32.0	5.59	5.5	2	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
WPB 8005	10.0	8.50	33.1	5.31	7.2	1	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
WPB 8008	10.5	8.70	32.2	6.05	6.8	2	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
KRONAS	10.6	8.70	33.1	5.55	6.9	2	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
CONCORDE	10.5	8.80	32.6	5.68	7.2	1	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
OQUITILLO	11.1	8.30	33.1	6.44	6.9	3	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
WPB 8009	10.5	8.40	33.1	6.44	6.5	1	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
FMC 7172A	10.6	7.70	32.4	6.13	6.8	1	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
FMC 5237-1	10.5	8.20	32.6	6.78	7.1	2	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
FMC 5318	10.6	8.10	32.7	6.26	6.8	1	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
FMC 5666	10.9	8.10	32.7	6.31	6.6	2	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
UC 988	10.5	7.60	32.8	6.11	6.6	1	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
UC 989	10.5	8.00	32.4	5.79	6.9	2	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
APB 91-PS-1	10.8	7.80	33.7	5.98	7.3	1	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
APB FC#6	10.4	7.80	32.5	6.83	6.8	1	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ
TITAN	10.6	6.90	33.3	6.52	7.0	1	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ	MJ

DEFICIENCIES	TW	KW	SM	WP	TX	SX	DU	SK	SP	VI	FR
Avg. of Standards	62.8	51.5	1	12.4	77.3	60.3	7.20	.	10.8	8.20	6.20
Minor Faulting Values	60.6	49.4	6	12.5	74.8	57.3	6.95	.	11.5	7.95	4.70
Major Faulting Values	59.7	46.4	11	11.5	73.8	56.3	6.75	11.0	7.75	3.95	

**EVALUATION 1=NO PROMISE,
2=LITTLE PROMISE,
3=SOME PROMISE,
4=GOOD PROMISE

TABLE 18

QUALITY DATA OF DURUM SAMPLES 1993 CROP
STATE=CALIFORNIA STATION=DAVIS NURSERY=ADVANCED

VARIETY	STD	WT	#/BU	WT	TEST			1000 SIZING			WHT PRO			HARDNESS			FALL NO SEC			SEMOL TOTAL EXTR %			SEMO SPK ASH COLOR %			DUST MIXO SCORE		
					K.WT	G.	%	LG	SM	%	ASH	%	WHT	PRO	%	NESS	NO	SEC	EXTR	%	ASH	COLOR %	EXTR	%	DUST	MIXO	SCORE	
MEXICALI 75		61.8	53.5	88	0	1.67		12.8	163		192		83.8	67.3							0.84		6.80		6			
ALDURA		63.4	52.6	83	0	1.62		12.7	148		308		84.2	66.3							0.74		7.00		4			
YAVAROS 79		64.7	64.5	90	1	1.56		10.8	138		339		84.9	69.6							0.67		6.40		4			
WESTBREB 881	S	62.0	60.2	92	1	1.76		13.8	148		319		84.4	66.4							0.80		7.00		8			
WESTBRED TURBO		63.9	54.6	87	1	1.50		11.8	150		378		80.6	64.7							0.69		6.80		5			
NUDURA		63.6	64.9	97	0	1.72		13.7	147		359		84.8	68.4							0.80		6.90		7			
REVA		63.3	53.5	87	1	1.77		12.6	140		197		83.3	66.6							0.83		7.00		6			
DUREX		61.8	58.5	93	0	1.71		13.2	151		309		84.5	66.9							0.77		6.90		6			
FMC 5456		63.6	49.0	80	2	1.58		11.6	146		271		80.9	63.6							0.73		6.80		4			
UC 907		62.8	62.5	92	2	1.75		12.8	150		248		84.0	66.1							0.85		6.80		3			
UC 908		62.3	61.3	95	0	1.83		14.6	152		109		86.2	66.2							0.87		6.70		3			
UC 910		63.7	49.8	87	0	1.81		13.4	146		254		82.9	63.9							0.04		7.20		2			
WPB 8001		63.1	48.8	83	2	1.63		11.2	148		367		81.3	63.6							0.80		7.00		3			
WPB 8003		61.6	54.1	86	1	1.65		12.3	141		346		83.0	65.1							0.86		6.90		5			
FMC 5476		62.5	56.2	85	1	1.59		12.0	144		166		83.5	65.1							0.77		7.20		6			
FMC 8869		63.0	54.3	84	1	1.64		12.6	158		338		83.1	67.3							0.79		7.00		6			
ALDENTE		62.8	54.6	87	1	1.61		12.8	150		353		85.0	66.8							0.76		6.90		6			
WPB 8005		64.2	50.0	81	1	1.65		12.1	140		383		81.6	64.4							0.76		7.00		5			
WPB 8008		61.7	61.0	92	2	1.72		13.4	152		247		82.6	66.7							0.81		7.10		7			
KRONAS		62.2	59.9	95	0	1.68		12.1	139		179		81.5	64.4							0.77		7.00		5			
CONCORDE		64.3	54.3	88	1	1.58		12.0	147		352		83.8	66.9							0.72		6.90		6			
Ocotillo		63.2	52.9	86	1	1.71		12.6	146		324		82.3	65.2							0.75		6.90		6			
WPB 8009		62.2	50.0	73	2	1.53		12.5	151		223		82.0	65.5							0.75		7.20		6			
FMC 7172A		62.9	47.6	81	2	1.83		13.4	154		273		83.2	65.1							0.80		6.50		5			
FMC 5237-1		62.0	54.3	87	1	1.74		13.5	159		162		82.5	66.0							0.82		7.00		5			
FMC 5318		63.3	50.3	79	1	1.79		12.0	137		267		81.8	64.6							0.76		7.30		7			
FMC 5666		61.7	59.5	94	0	1.74		13.4	134		217		82.2	66.0							0.77		6.90		8			
UC 988		63.8	65.8	96	0	1.75		13.8	157		186		84.2	67.6							0.87		6.70		7			
UC 989		60.8	54.9	86	1	1.70		13.6	151		184		82.0	65.0							0.84		7.00		8			
APB 91-PS-1		62.9	46.9	80	2	1.72		12.0	139		275		82.1	63.8							0.75		6.60		6			
APB FC#6		64.2	52.4	85	1	1.57		11.2	141		358		82.7	65.0							0.73		7.00		5			

TABLE 18 CONTD

QUALITY DATA OF DURUM SAMPLES 1993 CROP
STATE=CALIFORNIA STATION=DAVIS NURSERY=ADVANCED

VARIETY	STD	SEMO %	COOK COL G.	FIRMNESS	RES G.	TW	KW	SM	WP	TX	SX	DU	SK	SP	VI	FR	DEFICIENCIES	
MEXICALI 75		12.0	7.10	32.1	6.18	5.8												MJ
ALDURA		11.6	7.00	32.3	5.12	6.7	2											MJ
YAVAROS 79		10.3	6.60	33.0	4.90	7.2	1											MJ MJ MI
WESTBREB 381	S	12.6	7.20	31.6	6.72	6.4	4											MJ
WESTBRED TURBO		10.9	7.10	31.4	5.53	6.4	1											MJ
NUDURA		13.2	7.10	31.2	6.35	6.4	4											MJ
REVA		11.8	6.90	33.1	6.93	7.1	2											MJ
DUREX		12.3	7.10	32.4	7.91	7.0	4											MJ
FMC 5456		11.0	7.00	30.9	6.61	6.3	1											MJ
UC 907		11.6	6.60	31.9	5.77	6.0	2											MJ MJ
UC 908		13.0	6.50	31.4	6.46	6.8	1											MJ
UC 910		12.2	7.50	33.7	5.44	6.5	3											MJ
WPB 8001		10.9	7.20	32.5	5.62	6.7	1											MJ MJ MJ
WPB 8003		11.5	6.90	31.9	5.62	6.5	1											MJ MJ MJ
FMC 5476		13.1	7.40	33.1	5.34	7.4	4											MJ MJ MJ MJ
FMC 8869		11.9	7.20	31.9	6.57	7.0	3											MJ MJ MJ
ALDENTE		11.8	7.10	31.8	6.42	7.1	3											MJ MJ MJ
WPB 8005		11.6	7.60	31.9	6.29	6.1	3											MJ MJ MJ
WPB 8008		12.7	7.30	31.4	6.89	6.5	4											MJ MJ MJ MJ
KRONAS		11.7	7.50	32.5	5.94	7.1	4											MJ MJ MJ MJ
CONCORDE		11.5	7.70	31.6	5.94	6.7	2											MJ MJ MJ MJ
Ocotillo		12.1	7.50	31.8	6.16	6.7	3											MJ MJ MJ MJ
WPB 8009		12.0	7.40	32.7	5.96	6.5	3											MJ MJ MJ MJ
FMC 7172A		12.2	6.80	32.9	6.05	7.0	1											MJ MJ MJ MJ
FMC 5237-1		12.7	7.30	32.0	6.67	6.8	3											MJ MJ MJ MJ
FMC 5318		11.5	7.40	30.9	6.13	6.2	2											MJ MJ MJ MJ
FMC 5666		12.5	7.10	31.2	7.21	6.5	4											MJ MJ MJ MJ
UC 988		12.9	6.70	31.3	6.57	6.5	1											MJ MJ MJ MJ
UC 989		12.7	6.90	31.2	7.28	6.2	2											MJ MJ MJ MJ
APB 91-PS-1		11.6	7.10	32.6	5.31	6.7	2											MJ MJ MJ MJ
APB FC#6		10.6	7.40	32.8	5.53	6.5	1											MJ MJ MJ MJ

DEFICIENCIES
AVG OF STANDARDS
MINOR FAULTING VALUES
MAJOR FAULTING VALUES
**EVALUATION 1=NO PROMISE,
2=LITTLE PROMISE,
3=SOME PROMISE,
4=GOOD PROMISE

TABLE 19 CONT'D

QUALITY DATA OF DURUM SAMPLES 1993 CROP
 STATE=CALIFORNIA STATION=KINGS CO. NURSERY=ADVANCED

----VARIETY----	STD	PRO	COL.	WT	COOK	FIRM- NESS	RES	*** G.	SCORE							DEFICIENCIES			
									SEMO	VIS	KW	SM	WP	TX	SX	DU	SK	SP	VI	FR
MEXICALI 75			12.0	7.70	31.1	5.79	5.8	1											
ALDURA			11.7	8.10	33.1	5.42	6.3	2											
YAVAROS 79			11.2	7.50	31.9	5.83	6.1	1											
WESTBRED 881	S		13.4	8.10	30.7	7.45	5.8	4											
WESTBRED TURBO			11.0	8.00	32.6	5.49	6.9	1											
NUDURA			13.3	8.10	31.5	7.13	6.0	4											
REVA			12.9	8.00	31.9	6.24	6.5	3											
DUREX			13.2	8.20	30.7	6.91	5.9	4											
FMC 5456			11.7	7.80	32.5	5.68	6.2	1											
UC 907			11.5	7.50	31.0	6.96	5.9	1											
UC 908			11.8	7.60	31.5	6.31	6.7	2											
UC 910			12.2	8.10	32.3	6.67	5.5	3											
WPB 8001			12.1	7.90	35.7	6.29	6.4	3											
WPB 8003			12.1	7.60	31.8	6.13	7.3	1											
FMC 5476			11.6	8.10	31.9	6.03	6.3	4											
FMC 8869			12.1	7.90	31.7	6.13	6.3	3											
ALDENTE			11.2	8.20	32.2	5.31	7.4	2											
WPB 8005			11.5	8.30	32.9	5.79	6.8	1											
WPB 8008			12.9	8.30	31.5	6.78	6.5	4											
KRONAS			12.0	8.50	32.3	6.03	6.4	4											
CONCORDE			11.4	8.20	30.5	5.89	6.1	1											
OCOTILLO			12.7	7.90	31.4	6.46	6.2	3											
WPB 8009			11.3	8.40	31.2	5.44	6.3	1											
FMC 7172A			12.5	7.60	32.1	5.83	6.6	1											
FMC 5237-1			11.7	8.20	32.6	5.46	6.5	3											
FMC 5318			11.7	8.20	32.1	5.85	6.2	2											
FMC 5666			12.2	8.00	31.6	6.42	6.1	4											
UC 988			12.2	7.70	33.1	5.75	6.6	1											
UC 989			12.9	7.80	31.4	7.37	6.1	2											
APB 91-PS-1			11.9	7.70	31.6	7.52	6.4	1											
APB FC#6			11.5	7.60	32.3	7.37	6.4	1											

DEFICIENCIES TW KW SM WP TX SX DU SK SP VI FR
 AVG OF STANDARDS 62.7 60.2 0 14.6 75.0 59.1 7.30 . 13.4 8.10 7.45
 MINOR FAULTING VALUES 60.5 58.1 5 12.5 72.5 56.1 7.05 . 11.5 7.85 5.95
 MAJOR FAULTING VALUES 59.6 55.1 10 11.5 71.5 55.1 6.85 . 11.0 7.65 5.20
 **EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

QUALITY DATA OF DURUM SAMPLES 1993 CROP
STATE=CALIFORNIA STATION=KINGS CO. NURSERY=ADVANCED

TABLE 19

VARIETY-----	STD	TEST WT	1000 SIZING			WHT PRO %	HARDNESS NO SEC	TOTAL SEMO EXTR SPK %	SEMO DUST ASH COLOR %	MIXO SCORE
			K.WT	LG	SM					
MEXICALI 75		63.0	54.3	90	2	1.62	12.9	138	39.2	75.8
ALDURA		64.3	54.3	87	1	1.58	12.9	157	39.0	75.6
YAVAROS 79		65.6	57.8	89	1	1.46	12.2	151	425	75.8
WESTBRED 881	S	62.7	60.2	96	0	1.59	14.6	139	451	75.0
WESTBRED TURBO		64.0	54.1	85	1	1.47	12.0	152	410	76.5
NUDURA		64.3	66.7	98	0	1.72	15.0	151	415	76.1
REVA		62.9	50.3	82	1	1.68	13.4	143	411	76.4
DUREX		62.4	58.8	96	0	1.62	14.3	141	394	77.1
FMC 5456		64.5	52.9	88	1	1.50	12.6	151	402	78.3
UC 907		63.9	54.3	92	1	1.43	12.5	151	384	79.0
UC 908		63.8	58.1	91	1	1.52	13.5	151	380	81.3
UC 910		63.9	47.8	82	1	1.62	13.4	141	387	77.8
WPB 8001		62.7	46.3	68	2	1.51	12.8	134	386	77.9
WPB 8003		62.0	51.8	89	1	1.43	12.4	135	383	78.7
FMC 5476		63.9	55.2	89	1	1.47	12.1	142	412	80.5
FMC 8869		63.1	54.3	84	1	1.57	13.0	144	445	80.2
ALDENTE		63.9	56.5	89	1	1.45	12.3	142	389	75.5
WPB 8005		64.2	51.8	84	1	1.59	12.4	140	392	76.4
WPB 8008		62.5	62.1	94	1	1.54	14.0	152	400	76.5
KRONAS		62.8	58.1	93	1	1.52	13.3	142	472	77.3
CONCORDE		64.7	52.1	88	2	1.47	12.2	131	422	76.9
OCOTILLO		63.3	52.9	87	0	1.58	13.6	151	451	79.0
WPB 8009		64.0	52.6	85	2	1.38	12.3	151	492	77.3
FMC 7172A		63.7	47.8	78	1	1.63	13.6	147	441	78.8
FMC 5237-1		63.4	56.5	91	1	1.55	12.8	158	430	79.1
FMC 5318		63.0	46.7	71	1	1.67	12.7	148	420	78.3
FMC 5666		63.0	57.3	93	0	1.59	13.5	143	436	78.6
UC 988		64.8	59.2	95	0	1.52	13.3	144	407	80.3
UC 989		61.6	54.6	87	0	1.87	13.3	148	440	77.7
APB 91-PS-1		63.3	45.2	71	2	1.60	13.0	148	417	79.8
APB FC#6		63.6	49.8	83	2	1.51	12.3	145	467	80.9

TABLE 20

QUALITY DATA OF DURUM SAMPLES
STATE=ARIZONA STATION=TUCSON CROP
NURSERY=ADVANCE 1993

VARIETY-----	TEST #/BU	WT G.	K.WT G.	SIZING %	WHT SM %	WHT PRO %	HARD-NESS %	FALL NO SEC	TOTL EXTR %	SEMO EXTR %	SEMO SPK %	DUST COLOR %	MIXO SCORE %	
ALDURA	TEST S	63.3	49.0	82	0	1.72	13.3	134	400	88.2	65.4	20	0.73	7.10
WESTBRED 881	WT	62.9	56.2	91	0	1.76	14.2	126	400	81.2	63.8	47	0.72	7.10
ALDENTTE	STD	63.1	54.1	90	0	1.69	13.3	137	400	81.2	64.6	30	0.72	6.90
D5456	#/BU	64.5	51.0	83	1	1.79	13.0	128	400	81.1	65.1	33	0.74	6.90
D8869		62.7	51.0	80	0	1.78	13.7	117	400	79.8	63.7	40	0.73	6.80
D7172A		63.8	43.3	67	1	1.88	13.8	131	400	77.1	63.6	37	0.73	6.60
D8095		63.4	43.3	80	0	1.89	14.0	126	400	80.2	63.3	57	0.81	7.30
D53188BW		63.7	48.3	83	0	1.94	13.3	130	400	80.8	62.3	50	0.80	7.30
DUREX		62.9	54.6	93	0	1.77	14.0	129	400	80.9	63.7	53	0.71	7.00
8001		62.3	48.8	82	1	1.79	13.9	131	400	79.7	61.9	63	0.74	7.10
8003		61.2	49.8	86	0	1.88	14.2	127	400	80.4	63.3	37	0.81	6.90
8005		63.1	47.1	78	1	1.81	13.2	134	400	81.5	63.7	47	0.74	7.10
REVA		62.5	50.3	84	1	1.93	14.2	127	400	80.0	62.5	53	0.80	7.00
8008		63.3	53.2	89	0	1.75	14.0	127	400	79.5	63.8	40	0.76	7.20
WESTBRED TURBO		62.6	50.0	82	0	1.74	13.2	128	400	79.5	61.8	20	0.67	7.00
KRONOS		63.3	60.2	94	0	1.77	14.1	130	400	78.5	62.0	30	0.68	7.20
CONCORDE		64.4	52.1	91	0	1.79	14.5	131	400	79.9	62.1	13	0.69	7.00
OOCOTILLO		63.3	50.5	87	0	1.70	14.6	131	400	79.7	63.0	13	0.74	6.90
91-PS-1		63.1	42.4	67	0	1.85	13.7	125	400	81.5	63.6	27	0.73	6.70
MEXICALI		63.0	54.3	87	2	1.75	12.6	126	400	80.6	64.8	37	0.73	6.70
YAYAROS		65.3	57.3	89	0	1.63	12.1	125	400	81.0	65.0	20	0.67	6.50

QUALITY DATA OF DURUM SAMPLES 1993 CROP
 STATE=ARIZONA STATION=TUCSON NURSERY=ADVANCE

TABLE 20 CONT'D

VARIETY	STD	SEMO %	VIS COL G.	COOK WT G.	FIRMNESS	RES G.	SCORE ***	DEFICIENCIES-----										
								TW	KW	SM	WP	TX	SX	DU	SK	SP	VI	FR
ALDURA	12.1	7.90	32.4	6.50	6.5	3	MJ											
WESTBRED 881	S	13.0	7.80	30.1	7.69	6.7	4											
ALDENTINE	12.0	7.80	30.1	6.59	6.9	4	MJ											
D5456	11.7	7.70	31.4	6.11	6.8	2	MJ											
D8869	12.9	7.70	30.6	7.02	6.5	2	MJ											
D7172A	12.5	7.40	31.6	6.29	7.1	1	MJ											
D8095	13.1	8.10	30.9	7.52	6.3	3	MJ											
D53188BW	12.2	8.00	30.6	7.17	7.3	3	MJ											
DUREX	12.7	8.10	31.2	6.91	6.7	4	MJ											
8001	12.6	8.00	30.5	6.03	6.8	2	MJ											
8003	13.2	7.70	30.6	6.54	6.4	3	MJ											
8005	11.9	8.20	31.1	6.09	6.5	2	MJ											
REVA	13.4	7.70	31.8	6.87	7.5	3	MJ											
8008	12.9	8.20	31.8	6.50	7.4	4	MJ											
WESTBRED TURBO	11.8	8.10	31.5	6.29	7.3	3	MJ											
KRONOS	12.6	8.40	31.9	6.20	7.1	4	MJ											
CONCORDE	13.1	8.30	32.2	4.56	6.7	2	MJ											
OCOTILLO	13.6	8.00	30.9	7.26	6.6	3	MJ											
91-PS-1	12.5	7.80	31.6	6.37	6.8	2	MJ											
MEXICALI	11.5	7.50	32.2	5.62	6.6	1	MJ											
YAVAROS	10.9	7.30	31.7	5.72	7.0	1	MJ											

DEFICIENCIES

	TW	KW	SM	WP	TX	SX	DU	SK	SP	VI	FR
Avg of Standards	62.9	56.2	0	14.2	81.2	63.8	7.10	47	13.0	7.80	7.69
Minor Faulting Values	60.7	54.1	5	12.5	78.7	60.8	6.85	57	11.5	7.55	6.19
Major Faulting Values	59.8	51.1	10	11.5	77.7	59.8	6.65	62	11.0	7.35	5.44

* * EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

SCOTT
MAY 1994

